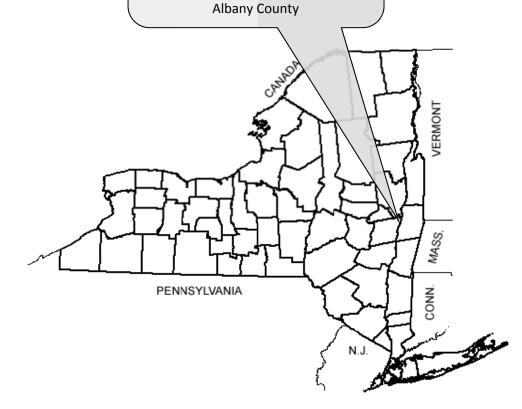
## TRANSPORTATION

## DRAFT DESIGN REPORT / ENVIRONMENTAL IMPACT STATEMENT

Appendix F – Traffic Analysis
January 2014

Highway Project
P.I.N. 1721.51
BINs: 1033141 / 1033142
Interstate 87 (I-87) Exit 4 Access
Improvements



U.S. Department of Transportation Federal Highway Administration





## **Traffic Analysis**

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## **Traffic Analysis**

The following discussion describes the traffic data used for this project and the methods used to analyze existing and future conditions. The exhibits that are also printed in the main body of the design report follow the design report naming convention. Exhibits unique to this appendix begin with the letter "F".

#### 1.0 DESIGN YEAR

The following design years are used in accordance with the NYSDOT Project Development Manual Appendix 5:

- Existing (2009)
- Estimated time of completion (ETC) (2016)
- ETC + 10 years (2026)
- ETC + 20 years (2036)
- ETC + 30 years (2046) at intersections adjacent to bridge structures and freeway segment underpasses or overpasses

#### 2.0 GROWTH RATES

Traffic volume projections for the project study area were conducted by the Capital District Transportation Committee (CDTC) using their regional travel demand model. CDTC is the designated Metropolitan Planning Organization (MPO) for the Albany-Schenectady-Troy-Saratoga metropolitan area. The model incorporates existing traffic counts, planned development and transportation projects, and growth projections to estimate future traffic volumes with and without the implementation of this project.

Since the volume projections derived from the regional demand model reflect changes associated with regional land use, demographics and travel, the resulting peak hour volumes do not represent a uniform growth rate applied throughout the project area network. In general, CDTC's volume projections show little to no growth for the No-Build scenario out to ETC+20. The growth and traffic diversions to the Exit 4 area vary for each of the Build Alternatives.

#### 3.0 STUDY AREA

The traffic study area includes the project limits described in Section 1.2.1 of the design report. Within this study area, the following intersections and freeway facilities are included in the traffic operations evaluations:

Signalized Intersections:

- Central Avenue & Wolf Road
- Wolf Road & Sand Creek Road
- Wolf Road & Metro Park Road
- Wolf Road & I-87 Exit 4 northbound (NB) off-ramp
- Albany-Shaker Road & Wolf Road / I-87 Exit 4 NB on-ramp
- Albany-Shaker Road & Old Wolf Road / I-87 Exit 4 southbound (SB) on-ramp
- Old Wolf Road & I-87 Exit 4 SB off-ramp
- Watervliet-Shaker Road & I-87 Exit 5 SB off- and on-ramps
- Watervliet-Shaker Road & I-87 Exit 5 NB off- and on-ramps / Holly Lane

I-87 (Northway): All freeway segments, ramp junctions and weaves from Exit 2 to Exit 6.

#### 4.0 TRAFFIC DATA

#### 4.1 Traffic Speeds

The posted speed limit on I-87 within the project limits is 55 mph. The posted speed limit on Albany-Shaker Road, Wolf Road, Old Wolf Road, and Watervliet-Shaker Road within the project limits is 40 mph.

Actual operating speeds during the AM and PM peak hours were compiled from data provided by NYSDOT and by information published byNYSDOT Highway Data Services. The average speed and 85<sup>th</sup> percentile operating speeds (where available) within the study area are provided in Exhibit 2.3.1.5 b.

| Exhibit 2.3.1.5 b Existing Peak Hour Traffic Speeds (mph) |                 |     |         |    |               |                     |  |
|---|-----------------|-----|---------|----|---------------|---------------------|--|
| Roadway: Segment  | Direction       | Ave | Average |    | ith<br>entile | Source <sup>1</sup> |  |
| Nodunay. Cog.mon.   | D 001.011       | АМ  | PM      | AM | PM            | Goules              |  |
| I-87: Exit 2 to Exit 4                                    | NB              | 57  | 51      | -  | -             | А                   |  |
| 1-07. EXIL 2 10 EXIL 4                                    | SB              | 56  | 56      | -  | -             | A                   |  |
| I-87: Exit 4 to Exit 5                                    | NB              | 57  | 45      | -  | -             | Δ.                  |  |
| 1-67. EXIL 4 TO EXIL 5                                    | SB              | 56  | 57      | -  | -             | Α                   |  |
| LOZ. Evit E to Evit C                                     | NB              | 52  | 41      | -  | -             | Δ.                  |  |
| I-87: Exit 5 to Exit 6                                    | SB              | 56  | 56      | -  | -             | A                   |  |
| Albany-Shaker Road: Airport to Old Wolf Road              | WB <sup>2</sup> | 30  | 29      | -  | -             | В                   |  |
| Wolf Road: Metro Park Road to Exit 4 NB off-              | NB              | 34  | 26      | -  | -             | В                   |  |
| ramp  | SB              | 37  | 34      | -  | -             | ь                   |  |
| Old Wolf Road: Exit 4 ramp to Old Niskayuna               | NB              | 33  | 27      | 43 | 42            | С                   |  |
| Road  | SB              | 33  | 23      | 41 | 41            |                     |  |
| Watervliet-Shaker Road: Exit 5 SB off-ramp to             | EB              | 27  | 23      | -  | -             | В                   |  |
| Exit 5 NB ramps   | WB              | 35  | 34      | -  | -             | D                   |  |

Sources of speed data:

- A. Continuous count stations via NYSDOT Region 1
- B. Running speeds from travel time study
- C. NYSDOT Highway Data Services

## 4.2 Travel Time & Delays

Field travel time data was collected in January 2009 on the study area roadways. Data was collected using the average-car method, where a vehicle is driven along the route traveling with traffic while distance, travel time and delay are recorded. The data collected was used as the basis for microsimulation modeling calibration (see Section 8.0).

Travel time and delay runs were conducted during the AM (7am to 9am) and PM (4pm to 6pm) peak hours. The study area was broken up into segments for the data collection. The sample size was nine to 15 runs in each direction on the local system (Wolf Road, Albany-Shaker Road, Old Wolf Road) and six to eight runs in each direction on I-87. The average travel time and delay collected from this study are summarized in Exhibit 2.3.1.5 a.

<sup>&</sup>lt;sup>2</sup> Travel times were not measured in the eastbound direction from the Airport.

| Exhibit 2.3.1.5 a Travel Time and Delay Summary |                                |                    |                           |                    |  |  |  |  |
|---|--------------------------------|--------------------|---------------------------|--------------------|--|--|--|--|
| Roadway: Segment                                | Overall<br>Travel<br>Time      | Delay<br>(seconds) | Overall<br>Travel<br>Time | Delay<br>(seconds) |  |  |  |  |
| Northb  | (seconds) (seconds) Northbound |                    |                           |                    |  |  |  |  |
| Wolf Road: Central to Metro Park                | 185                            | 44                 | 238                       | 73                 |  |  |  |  |
| Wolf Road/ASR: Metro Park to Old Wolf           | 159                            | 65                 | 335                       | 198                |  |  |  |  |
| I-87: Sand Creek Overpass to Airport            | 414                            | 144                | 403                       | 102                |  |  |  |  |
| Southbound                                      |                                |                    |                           |                    |  |  |  |  |
| WSR/CD Road/Old Wolf: Exit 5 NB Ramps to ASR    | 209                            | 69                 | 201                       | 63                 |  |  |  |  |
| ASR/Wolf Rd: Old Wolf to Metro Park             | 104                            | 18                 | 92                        | 5                  |  |  |  |  |
| Wolf Road: Metro Park to Central Ave            | 133                            | 72                 | 306                       | 127                |  |  |  |  |
| I-87: Exit 6 On-Ramp to Airport                 | 206                            | 52                 | 303                       | 35                 |  |  |  |  |

The cause of the majority of the delay time experienced along the routes was related to traffic signal delay.

#### 4.3 Traffic Volume Source

Existing AM and PM peak hour turning movement volumes were collected at many of the study area intersections in June and July of 2006 and January 2009. Traffic data was collected in years prior for the entire study area. The data collection conducted in 2009 was focused at key intersections in order to provide an update to data collected in 2006. All data collected in 2006 and 2009 was provided to CDTC to be used as a base in their regional demand model. Exhibit F.4.3-1 provides a summary of the data collection locations.

| Exhibit F.4.3-1<br>Traffic Data Collection Locations |      |      |  |  |  |  |
|--|------|------|--|--|--|--|
| Intersections  | 2006 | 2009 |  |  |  |  |
| Wolf Road & Central Avenue                           | X    |      |  |  |  |  |
| Wolf Road & Sand Creek Road                          | X    | X    |  |  |  |  |
| Wolf Road & Metro Park Road                          | X    |      |  |  |  |  |
| Wolf Road & NB off-ramp                              | X    | X    |  |  |  |  |
| Albany-Shaker Road & Wolf Road                       | X    | X    |  |  |  |  |
| Albany-Shaker Road & Old Wolf Road                   | X    | X    |  |  |  |  |
| Old Wolf Road & Exit 4 SB off-ramp                   | X    |      |  |  |  |  |
| Watervliet-Shaker Road & Exit 5 SB Ramps             |      | X    |  |  |  |  |
| Watervliet-Shaker Road & Albany-Shaker Road          | X    |      |  |  |  |  |
| Albany-Shaker Road & Airport Access                  | X    |      |  |  |  |  |

The raw traffic count data from 2006 and 2009 is provided in Attachment B of this Appendix.

With the data collected as a base, CDTC forecasted volumes for a seasonally adjusted Existing (2009) condition, ETC (2016) No-Build, ETC+10 (2026) No-Build, ETC+20 (2036) No-Build and ETC+30 (2046) No-Build conditions.

#### 4.4 Traffic Flow Diagrams

Exhibit 2.3.1.6 b presents the Existing (2009) traffic volumes for the study roadways. Exhibit F.4.4-1 presents the estimated future No-Build traffic volumes on these roadways for the four design horizons of the project. As shown in the exhibits, there is very little growth projected through the design years under the No-Build condition. The I-87 growth rates vary from 0.0% to 0.3% per year through ETC+30. The growth rates on the local system range from 0.1% to 1.1% per year through ETC+30.

The AM and PM peak hour traffic flow diagrams are presented in Attachment A of this Appendix. The AM and PM peak hours represent the periods of recurring peak hourly flows on the roadway network. The Existing and No-Build turning movement volumes at study intersections are presented on Figures F-1 through F-10. The Existing and No-Build I-87 mainline and ramp volumes are presented on Figures F-11 through F-20. Note that the I-87 and ramp volumes do not balance all the way through the corridor. This was done to maintain the source data provided by CDTC for the freeway segments and ramps.

| Exhibit 2.3.1.6 b Existing Traffic Volumes |                   |              |  |  |  |
|--|-------------------|--------------|--|--|--|
|  | Existin           | g (2009)     |  |  |  |
| Roadway: Segment                           | AADT <sup>1</sup> | AM Peak      |  |  |  |
|  | AADI              | PM Peak      |  |  |  |
| I-87: Exit 2 to Exit 4<br>Northbound       | 56,700            | 3000<br>5100 |  |  |  |
| I-87: Exit 4 to Exit 2<br>Southbound       | 56,700            | 5150<br>3750 |  |  |  |
| I-87: Exit 4 to Exit 5<br>Northbound       | 64,400            | 2700<br>5800 |  |  |  |
| I-87: Exit 5 to Exit 4<br>Southbound       | 48,900            | 4400<br>2500 |  |  |  |
| I-87: Exit 5 to Exit 6<br>Northbound       | 66,700            | 2500<br>6000 |  |  |  |
| I-87: Exit 6 to Exit 5<br>Southbound       | 67,800            | 6100<br>3300 |  |  |  |
| Albany-Shaker Rd:<br>West of Old Wolf      | 26,000            | 2300<br>2600 |  |  |  |
| Wolf Rd: South of Exit 4                   | 25,000            | 1950<br>2500 |  |  |  |

(1) AADT is the Average Annual Daily Traffic.

| Exhibit F.4.4-1 Forecast No-Build Traffic Volumes |                   |              |        |                    |        |                    |        |                    |
|---|-------------------|--------------|--------|--------------------|--------|--------------------|--------|--------------------|
|   | ETC               | (2016)       | ETC+   | 10 (2026)          | ETC+2  | 20 (2036)          | ETC+3  | 30 (2046)          |
| Roadway: Segment                                  | AADT <sup>1</sup> | AM Peak      | AADT   | AM Peak<br>PM Peak | AADT   | AM Peak<br>PM Peak | AADT   | AM Peak<br>PM Peak |
| I-87: Exit 2 to Exit 4<br>Northbound              | 56,700            | 3000<br>5100 | 57,200 | 3000<br>5150       | 57,800 | 3000<br>5200       | 58,300 | 3000<br>5250       |
| I-87: Exit 4 to Exit 2<br>Southbound              | 57,800            | 5200<br>3850 | 58,300 | 5250<br>3950       | 58,900 | 5300<br>4100       | 59,400 | 5350<br>4250       |
| I-87: Exit 4 to Exit 5<br>Northbound              | 65,600            | 2750<br>5900 | 66,100 | 2750<br>5950       | 66,700 | 2800<br>6050       | 67,200 | 2850<br>6050       |
| I-87: Exit 5 to Exit 4<br>Southbound              | 48,900            | 4400<br>2550 | 49,400 | 4450<br>2600       | 50,000 | 4550<br>2750       | 50,600 | 4550<br>2800       |
| I-87: Exit 5 to Exit 6<br>Northbound              | 67,800            | 2500<br>6100 | 68,300 | 2550<br>6150       | 69,400 | 2600<br>6250       | -      | -<br>-             |
| I-87: Exit 6 to Exit 5<br>Southbound              | 67,800            | 6100<br>3450 | 67,200 | 6050<br>3650       | 67,200 | 6050<br>3800       | -      | -                  |
| Albany-Shaker Rd:<br>West of Old Wolf             | 33,000            | 2450<br>3300 | 35,000 | 2550<br>3500       | 37,500 | 2600<br>3750       | 39,500 | 2800<br>3950       |
| Wolf Rd: South of Exit 4                          | 20,000            | 2050<br>2000 | 21,000 | 2000<br>2100       | 22,500 | 2000<br>2250       | -      | -                  |

<sup>(1)</sup> AADT is the Average Annual Daily Traffic.

#### 5.0 TRAFFIC CHANGES DUE TO BUILD ALTERNATIVES

Two feasible alternatives were evaluated: Diamond Alternative and Flyover Alternative. Refer to Section 3.2 for descriptions of the alternatives. As stated previously, CDTC used their regional demand model to estimate future traffic volumes for the project study area with and without the project alternatives. For the build alternatives, they incorporated the proposed connections and geometry into the roadway network to establish the traffic patterns.

#### 5.1 Diamond Alternative

There are several elements of the Diamond Alternative that will change the existing traffic patterns:

- Existing elements removed
  - Exit 4 SB off-ramp
  - Exit 5 SB on-ramp
  - o C-D road between Exits 5 and 4
  - o Exit 4 SB on-ramp
  - Exit 4 NB off-ramp
  - o Exit 4 NB on-ramp
- New ramp facilities
  - Exit 5 SB on-ramp from Watervliet-Shaker Road (creating a "diamond" configuration with the Exit 5 SB off-ramp)
  - Exit 4 NB and SB on- and off-ramps to a new connector road (creating a new "diamond" interchange
- New roadway
  - Connector Road from Wolf Road at Metro Park Road to Albany-Shaker Road (crossing over I-87)

All of these modifications to the existing system change the traffic patterns on segments of I-87 and the local roadway system. The addition of the Connector Road and Exit 4 Diamond ramps change patterns on the Exit 2 and Exit 5 ramps, especially for those with Wolf Road origins or destinations.

The AM and PM peak hour traffic flow diagrams are presented in Attachment A of this Appendix. The turning movement volumes at study intersections are presented on Figures F-21 through F-28. The Existing and No-Build I-87 mainline and ramp volumes are presented on Figures F-29 through F-36.

Compared to the No-Build condition, the Diamond Alternative is estimated to divert approximately 400 vehicles in the AM and 1,100 vehicles in the PM to the study area roadways from other roadways. This is a result of better access to the Airport, reduced congestion and shorter duration trips.

Exhibit F.5.1-1 presents the projected ETC (2016), ETC+10 (2026), ETC+20(2036), and ETC+30 (2046) Diamond Alternative traffic volumes for the study area. The Diamond Alternative sustains slight growth on I-87 at 0.5% per year or less.

|                                       | Exhibit F.5.1-1 Forecast Build Alternative Traffic Volumes Diamond Alternative |                    |        |                    |        |                    |        |                    |  |
|---------------------------------------|--|--------------------|--------|--------------------|--------|--------------------|--------|--------------------|--|
|                                       | ETC  | (2016)             | ETC+   | 10 (2026)          | ETC+   | 20 (2036)          | ETC+3  | 30 (2046)          |  |
| Roadway: Segment                      | AADT <sup>1</sup>  | AM Peak<br>PM Peak | AADT   | AM Peak<br>PM Peak | AADT   | AM Peak<br>PM Peak | AADT   | AM Peak<br>PM Peak |  |
| I-87: Exit 2 to Exit 4 NB             | 60,000   | 3300<br>5400       | 60,600 | 3500<br>5450       | 61,100 | 3650<br>5500       | 61,100 | 3650<br>5500       |  |
| I-87: Exit 4 to Exit 2 SB             | 57,800   | 5200<br>3850       | 58,300 | 5250<br>3950       | 58,900 | 5300<br>4050       | 59,400 | 5350<br>4050       |  |
| I-87: Exit 4 to Exit 5 NB             | 62,800   | 2500<br>5650       | 63,300 | 2600<br>5700       | 63,900 | 2650<br>5750       | 64,400 | 2650<br>5800       |  |
| I-87: Exit 5 to Exit 4 SB             | 59,400   | 5350<br>3650       | 62,200 | 5600<br>3800       | 65,000 | 5850<br>3900       | 65,000 | 5850<br>3900       |  |
| I-87: Exit 5 to Exit 6<br>Northbound  | 63,900   | 2400<br>5750       | 65,600 | 2550<br>5900       | 67,200 | 2550<br>6050       | -      | <del>-</del>       |  |
| I-87: Exit 6 to Exit 5<br>Southbound  | 67,800   | 6100<br>3500       | 68,900 | 6200<br>3625       | 70,000 | 6300<br>3750       | -      |                    |  |
| Albany-Shaker Rd:<br>West of Old Wolf | 18,000   | 1100<br>1800       | 18,500 | 1250<br>1850       | 19,500 | 1400<br>1950       | 20,000 | 1600<br>2000       |  |
| Wolf Rd: South of Exit 4              | 14,000   | 900<br>1400        | 15,000 | 950<br>1500        | 16,500 | 1050<br>1650       | -      | -                  |  |

<sup>(1)</sup> AADT is the Average Annual Daily Traffic.

## 5.2 Flyover Alternative

There are several elements of the Flyover Alternative that will change the existing traffic patterns:

- Existing elements removed
  - Exit 4 SB off-ramp
  - o Exit 5 SB on-ramp
  - o C-D road between Exits 5 and 4
  - o Exit 4 SB on-ramp
- Existing elements modified
  - Exit 4 NB off-ramp restricted to right-turn only onto Wolf Road SB
- New ramp facilities
  - o Exit 4 NB off-ramp to new intersection on Albany-Shaker Road
  - o Exit 5 SB on-ramp relocated to north (creates "half-diamond" with SB off-ramp)
  - o Exit 4 SB off-ramp to new intersection on Albany-Shaker Road
  - o Exit 4 SB on-ramp, accessed from new intersection on Albany-Shaker Road

All of these modifications to the existing system change the traffic patterns on segments of I-87 and the local roadway system. The removal of the C-D road and the Exit 4 SB off-ramp to Old Wolf Road significantly reduces the volumes on Old Wolf Road. Providing ramps to the new intersection on Albany-Shaker Road reduces the number of intersections that vehicles destined for Albany International Airport have to drive through.

The AM and PM peak hour traffic flow diagrams for this alternative are presented in Attachment A of this Appendix. The turning movement volumes at study intersections are presented on Figures F-37 through F-44 and the I-87 mainline and ramp volumes are presented on Figures F-45 through F-52.

Compared to the No-Build condition, the alternative is estimated to divert approximately 100 vehicles in the AM and 900 vehicles in the PM to the study area roadways from other roadways. This is a result of better access to the Airport, reduced congestion and shorter duration trips.

Exhibit F.5.2-1 presents the projected traffic volumes for the Flyover Alternative for each of the project's design-year horizons. The Flyover Alternative sustains slight growth on I-87 at 0.5% per year or less.

| Exhibit F.5.2-1 Forecast Build Alternative Traffic Volumes Flyover Alternative |                   |                    |        |                    |        |                    |        |                    |
|--|-------------------|--------------------|--------|--------------------|--------|--------------------|--------|--------------------|
|  | ETC               | (2016)             | ETC+   | 10 (2026)          | ETC+   | 20 (2036)          | ETC+3  | 80 (2046)          |
| Roadway: Segment   | AADT <sup>1</sup> | AM Peak<br>PM Peak | AADT   | AM Peak<br>PM Peak | AADT   | AM Peak<br>PM Peak | AADT   | AM Peak<br>PM Peak |
| I-87: Exit 2 to Exit 4 NB  | 61,100            | 3250<br>5500       | 62,200 | 3350<br>5600       | 62,800 | 3500<br>5650       | 63,300 | 3550<br>5700       |
| I-87: Exit 4 to Exit 2 SB  | 59,400            | 5350<br>3900       | 60,000 | 5400<br>4000       | 60,600 | 5450<br>4150       | 61,100 | 5500<br>4100       |
| I-87: Exit 4 to Exit 5 NB  | 65,600            | 2700<br>5900       | 66,100 | 2750<br>5950       | 66,100 | 2800<br>5950       | 66,100 | 2800<br>5950       |
| I-87: Exit 5 to Exit 4 SB  | 58,900            | 5300<br>3650       | 62,200 | 5600<br>3800       | 65,000 | 5850<br>3900       | 65,000 | 5850<br>3900       |
| I-87: Exit 5 to Exit 6<br>Northbound   | 68,300            | 2550<br>6150       | 68,600 | 2600<br>6175       | 68,900 | 2650<br>6200       | ı      |                    |
| I-87: Exit 6 to Exit 5<br>Southbound   | 66,700            | 6000<br>3500       | 67,800 | 6100<br>3650       | 68,300 | 6150<br>3800       | ı      | <del>-</del>       |
| Albany-Shaker Rd:<br>West of Old Wolf  | 19,000            | 1800<br>1900       | 20,500 | 2000<br>2050       | 22,000 | 2200<br>2200       | 24,500 | 2300<br>2450       |
| Wolf Rd: South of Exit 4   | 18,500            | 1600<br>1850       | 19,000 | 1700<br>1900       | 19,500 | 1800<br>1950       | 20,500 | 1950<br>2050       |

<sup>(1)</sup> AADT is the Average Annual Daily Traffic.

#### 6.0 TRUCK TRAFFIC

Heavy vehicle (truck) traffic for the study area roadways and intersections was compiled and used in the VISSIM and HCS analyses. Exhibit F.6.0-1 provides a summary of the truck percentages used. Daily truck percentage was not available for Wolf Road.

| Exhibit F.6.0-1  Truck Data |              |                  |              |  |  |  |
|-----------------------------|--------------|------------------|--------------|--|--|--|
| Route                       | I-87         | Albany-Shaker Rd | Wolf Rd      |  |  |  |
| % Peak Hour Trucks          | 2% AM, 2% PM | 3% AM, 2% PM     | 1% AM, 1% PM |  |  |  |
| % Daily Trucks              | 8%           | 7%               | -            |  |  |  |

### 7.0 ANALYSIS

A VISSIM microsimulation model was used to analyze the study area roadway network. The model was used to evaluate travel times, intersection delays and overall network delay. The LOS applied to the intersections are based on the criteria set forth in the 2000 Highway Capacity Manual (HCM) published by the Transportation Research Board (TRB). Freeway and ramp junction LOS were evaluated using Highway Capacity Software (HCS). LOS criteria from the HCM are provided in Attachment D of this Appendix.

#### 8.0 CALIBRATION

The Existing condition VISSIM model was calibrated to field conditions in order to provide a base model from which all future No-Build and Build alternative models could be developed. This calibration involved

a program of field samples of applicable observable metrics such as vehicle queuing, volumes and travel times. Model attributes and input variables were developed to replicate operations based on these field conditions.

#### 8.1 Field Data Collection

In January 2009, turning movement traffic counts were conducted at key intersections within the study area to update data that was collected in 2006. Traffic counts were conducted during the weekday morning and evening peak periods of 7 am to 9 am and 4 pm to 6pm. While the turning movement counts were conducted, spot queue length observations were also taken to establish the average and max queue lengths at the intersections.

Travel times through the study area were also collected, as described and presented in Section 4.2. The travel time data collection was broken up between for five different segments of the study area. Times were also recorded at intersections along the route in order to provide the time between intersections and the delay experienced.

Existing roadway and intersection geometry was documented as well as traffic control devices. Traffic signal timing and phasing records were obtained from NYSDOT for the signalized intersections within the project study area.

#### 8.2 Model Calibration

The data collected was used as a basis to calibrate the base model to replicate existing conditions. The field collected volumes, geometry and traffic control devices were input into the model. Travel times were collected from the model for the same limits and segments as was collected in the field.

In order to replicate existing conditions on congested roadways and ramps, driving behavior parameters had to be customized from the standard default values for some parts of the study area. Parameters such as look ahead/back distance, headway time, maximum deceleration, safety distance and waiting time before diffusion were adjusted to replicate the more aggressive driving behaviors in these areas. Speeds were also adjusted to match the existing speeds of vehicles entering and exiting the network. Information from the travel time field samples as well as posted speeds were used to determine appropriate speeds for the network, especially in areas where congestion is experienced outside of the modeled network but results in slowdowns within the modeled network. Speed reductions were used on roadway segments that contain multiple mid-block driveways and/or other traffic signals that were not included in the study. A model seeding interval of 550 seconds was utilized to ensure that the entire network is populated with vehicles prior to the evaluation of the peak hour.

An FHWA publication, *Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software*, provides some guidance on calibration targets. A summary of these targets is shown in Attachment C. For this model, a target of 10% variation from the field collected travel time for each overall run was used, which is a more refined calibration than the FHWA guidance (15%).

Exhibits F.8.2-1 and F.8.2-2 summarize the comparison between the field collected travel times and the times extracted from the calibrated VISSIM models. As shown, the travel times in the models are all within the 10% variation target from the field collected times.

#### Exhibit F.8.2-1 VISSIM Calibration Results AM Peak Travel Time Calibration

| Travel Time Segment                             | Field Time * | Model Time * | % Difference |  |  |  |  |
|---|--------------|--------------|--------------|--|--|--|--|
| Northbound                                      |              |              |              |  |  |  |  |
| Wolf Road: Central to Sand Creek                | 119          | 114          |              |  |  |  |  |
| Wolf Road: Sand Creek to Metro Park             | 66           | 63           |              |  |  |  |  |
| Wolf Road: Central to Metro Park                | 185          | 177          | -4.6%        |  |  |  |  |
| Wolf Road: Metro Park to Exit 4 NB Off          | 63           | 64           |              |  |  |  |  |
| Wolf Road: Exit 4 NB Off to ASR                 | 57           | 40           |              |  |  |  |  |
| ASR: Wolf to Old Wolf                           | 39           | 45           |              |  |  |  |  |
| Wolf Road/ASR: Metro Park to Old Wolf           | 159          | 154          | -3.4%        |  |  |  |  |
| I-87: Sand Creek Overpass to Exit 4 NB Off-Ramp | 154          | 180          |              |  |  |  |  |
| Wolf Road: Exit 4 NB Off to ASR                 | 57           | 40           |              |  |  |  |  |
| ASR: Wolf to Old Wolf                           | 39           | 45           |              |  |  |  |  |
| ASR: Old Wolf to Airport                        | 116          | 110          |              |  |  |  |  |
| I-87: Sand Creek Overpass to Airport            | 414          | 428          | 3.4%         |  |  |  |  |
| Southbou  | ınd          | -            |              |  |  |  |  |
| WSR: Exit 5 NB Ramps to SB Ramps                | 39           | 49           |              |  |  |  |  |
| CD Road: Exit 5 SB Ramps to Old Wolf            | 83           | 73           |              |  |  |  |  |
| Old Wolf Road: CD Road to ASR                   | 86           | 80           |              |  |  |  |  |
| WSR/CD Road/Old Wolf: Exit 5 NB Ramps to ASR    | 209          | 208          | -0.6%        |  |  |  |  |
| ASR: Old Wolf to Wolf                           | 22           | 36           |              |  |  |  |  |
| Wolf Road: ASR to Exit 4 NB Off Ramp            | 33           | 17           |              |  |  |  |  |
| Wolf Road: Exit 4 NB Off to Metro Park          | 49           | 53           |              |  |  |  |  |
| ASR/Wolf Road: Old Wolf to Metro Park           | 104          | 106          | 1.8%         |  |  |  |  |
| Wolf Road: Metro Park to Sand Creek             | 92           | 95           |              |  |  |  |  |
| Wolf Road: Sand Creek to Central                | 121          | 115          |              |  |  |  |  |
| Wolf Road: Metro Park to Central                | 213          | 211          | -1.0%        |  |  |  |  |
| I-87/CD Road: Exit 6 to Old Wolf                | 145          | 148          |              |  |  |  |  |
| Old Wolf Road: CD Road to ASR                   | 86           | 80           |              |  |  |  |  |
| ASR: Old Wolf to Airport                        | 122          | 110          |              |  |  |  |  |
| I-87: Exit 6 On-Ramp to Airport                 | 326          | 341          | 4.5%         |  |  |  |  |

<sup>\*</sup> Travel Time provided in seconds.

#### Exhibit F.8.2-2 VISSIM Calibration Results PM Peak Travel Time Calibration

| Travel Time Segment                             | Field Time * | Model Time * | % Difference |  |  |  |  |
|---|--------------|--------------|--------------|--|--|--|--|
| Northbound                                      |              |              |              |  |  |  |  |
| Wolf Road: Central to Sand Creek                | 148          | 146          |              |  |  |  |  |
| Wolf Road: Sand Creek to Metro Park             | 91           | 86           |              |  |  |  |  |
| Wolf Road: Central to Metro Park                | 238          | 232          | -2.4%        |  |  |  |  |
| Wolf Road: Metro Park to Exit 4 NB Off          | 202          | 161          |              |  |  |  |  |
| Wolf Road: Exit 4 NB Off to ASR                 | 111          | 91           |              |  |  |  |  |
| ASR: Wolf to Old Wolf                           | 43           | 42           |              |  |  |  |  |
| Wolf Road/ASR: Metro Park to Old Wolf           | 335          | 311          | -7.0%        |  |  |  |  |
| I-87: Sand Creek Overpass to Exit 4 NB Off-Ramp | 154          | 166          |              |  |  |  |  |
| Wolf Road: Exit 4 NB Off to ASR                 | 111          | 91           |              |  |  |  |  |
| ASR: Wolf to Old Wolf                           | 43           | 42           |              |  |  |  |  |
| ASR: Old Wolf to Airport                        | 132          | 101          |              |  |  |  |  |
| I-87: Sand Creek Overpass to Airport            | 403          | 403          | -0.1%        |  |  |  |  |
| Southbou  | ınd          |              |              |  |  |  |  |
| WSR: Exit 5 NB Ramps to SB Ramps                | 53           | 57           |              |  |  |  |  |
| CD Road: Exit 5 SB Ramps to Old Wolf            | 76           | 69           |              |  |  |  |  |
| Old Wolf Road: CD Road to ASR                   | 71           | 96           |              |  |  |  |  |
| WSR/CD Road/Old Wolf: Exit 5 NB Ramps to ASR    | 201          | 211          | 5.1%         |  |  |  |  |
| ASR: Old Wolf to Wolf                           | 19           | 33           |              |  |  |  |  |
| Wolf Road: ASR to Exit 4 NB Off Ramp            | 18           | 15           |              |  |  |  |  |
| Wolf Road: Exit 4 NB Off to Metro Park          | 56           | 52           |              |  |  |  |  |
| ASR/Wolf Road: Old Wolf to Metro Park           | 92           | 99           | 8.1%         |  |  |  |  |
| Wolf Road: Metro Park to Sand Creek             | 125          | 124          |              |  |  |  |  |
| Wolf Road: Sand Creek to Central                | 181          | 180          |              |  |  |  |  |
| Wolf Road: Metro Park to Central                | 306          | 305          | -0.4%        |  |  |  |  |
| I-87/CD Road: Exit 6 to Old Wolf                | 129          | 144          |              |  |  |  |  |
| Old Wolf Road: CD Road to ASR                   | 71           | 96           |              |  |  |  |  |
| ASR: Old Wolf to Airport                        | 121          | 101          |              |  |  |  |  |
| I-87: Exit 6 On-Ramp to Airport                 | 303          | 328          | 8.2%         |  |  |  |  |

<sup>\*</sup> Travel Time provided in seconds.

#### 9.0 LEVEL OF SERVICE CRITERIA

LOS is presented as a letter from A to F with A representing free flowing, unimpeded traffic with little or no delay and F representing highly congested traffic flow with long delays.

Standard design objectives for urban street systems is to achieve a LOS D on all intersection approaches during peak hours (NYSDOT Highway Design Manual, Chapter 5.9.2). However, it is recognized that there are many competing objectives and considerations, especially in urban areas, that may affect the desirability and feasibility of achieving this goal for peak hours. In these cases, peak-hour LOS E or F may be acceptable.

#### 10.0 LEVEL OF SERVICE, TRAVEL TIME AND DELAYS

## 10.1 Existing and No-Build

#### 10.1.1 Intersection Level of Service

Summaries of the LOS for the Existing and future No-Build conditions are presented in Exhibits F.10.1.1-1 through F.10.1.1-10. As shown in these analyses, the following study area intersections have one or more movement that experience LOS E or worse during the Existing studied peak hours:

- Central Avenue & Wolf Road (PM)
- Sand Creek Road & Wolf Road (PM)
- Exit 4 NB off-ramp & Wolf Road (AM & PM)
- Albany-Shaker Road & Wolf Road (AM & PM)
- Albany-Shaker Road & Old Wolf Road (AM & PM)
- Old Wolf Road & C-D Road (AM)

The intersections experience higher delay levels during the PM peak hour as volumes are higher on Wolf Road and at the intersections.

Delay is estimated to increase through the ETC+20 design horizon due to background traffic growth. For the ETC+20 No-Build condition, the following study area intersections will experience LOS E or worse for one or more movements during the studied peak hours:

- Central Avenue & Wolf Road (PM)
- Sand Creek Road & Wolf Road (PM)
- Exit 4 NB off-ramp & Wolf Road (AM & PM)
- Albany-Shaker Road & Wolf Road (PM)
- Albany-Shaker Road & Old Wolf Road (AM & PM)
- Old Wolf Road & C-D Road (AM)
- Exit 5 SB Ramps & Watervliet-Shaker Road (PM)

The LOS for some improvements improved at the intersection of Albany-Shaker Road & Wolf Road when comparing Existing to No-Build. This is related to the change in volume distribution at the intersection due to the opening of the final phase of the Wolf Road parallel connector road, which will create a connection from Albany-Shaker Road to Aviation Road.

# Exhibit F.10.1.1-1 VISSIM Analysis Results Intersection Level of Service 2009 Existing AM

| Intersection/Appr     | oach      | Delay *  | LOS | Intersection/Approx      | ach           | Delay *  | LOS |
|-----------------------|-----------|----------|-----|--------------------------|---------------|----------|-----|
| Central Avenue & Wol  | f Road    | <u> </u> |     | Albany Shaker Road & V   | Volf Road     | <u> </u> |     |
| Central Avenue        | EB LL     | 39.9     | D   |                          | EB L          | 32.2     | С   |
| Central Avenue        | EB TT     | 19.5     | В   | Albany Shaker Road       | EB TT/R       | 32.7     | С   |
| Control Avenue        | WB TTT    | 38.5     | D   |                          | EB R          | 17.2     | В   |
| Central Avenue        | WB R      | 7.4      | Α   |                          | WB L          | 51.4     | D   |
| Exit 2 NB Off-Ramp    | NB TTT    | 40.2     | D   | Albany Shaker Road       | WB TT         | 25.9     | С   |
|                       | SB LL     | 46.6     | D   |                          | WB R          | 5.3      | Α   |
| Wolf Road             | SB RR     | 5.9      | Α   |                          | NB L          | 64.4     | E   |
| OVERALL               |           | 29.2     | С   | Wolf Road                | NB L/TT       | 41.4     | D   |
| Sand Creek Road & W   | olf Road  | •        |     | 1                        | NB R          | 19.0     | В   |
|                       | EB L      | 33.7     | С   | OVERALL                  | NO IX         | 32.3     | C   |
| Sand Creek Road       | EB T      | 32.6     | С   | Albany Shaker Road & C   | Old Wolf Roa  | ad       |     |
|                       | EB R      | 4.3      | A   |                          | EB L          | 43.2     | D   |
|                       | WB L      | 39.1     | D   | Albany Shaker Road       | EB TT         | 43.6     | D   |
| Sand Creek Road       | WB T      | 37.7     | D   | 1                        | EB R          | 26.9     | С   |
|                       | WB R      | 6.8      | А   |                          | WB L          | 29.2     | С   |
|                       | NB L      | 47.4     | D   | Albany Shaker Road       | WB TT/R       | 40.2     | D   |
| Wolf Road             | NB TT     | 21.9     | С   |                          | SB LL/T       | 56.8     | E   |
|                       | NB R      | 7.8      | A   | Old Wolf Road            | SB R          | 49.4     | D   |
|                       | SB L      | 46.7     | D   | OVERALL                  |               | 44.3     | D   |
| Wolf Road SB TT       |           | 21.8     | С   | Old Wolf Road & CD Roa   | ad            |          |     |
|                       | SB R      | 5.7      | Α   | Site Driveway            | EB L/T/R      | 9.9      | А   |
| OVERALL               |           | 25.8     | С   | CD Road                  | WB L/T/R      | 34.7     | С   |
| Metro Park & Wolf Roa | ad        | -        |     | Old Wolf Road            | NB L/T/R      | 37.5     | D   |
| Hess Station          | EB L/T/R  | 26.6     | С   | Old Wolf Road            | SB L/T/R      | 64.3     | E   |
| Metro Park Drive      | WB L      | 36.1     | D   | OVERALL                  |               | 39.2     | D   |
| Mello Falk Dilve      | WB T/R    | 8.1      | Α   | Exit 5 SB Ramps & Water  | ervliet Shake | er Road  |     |
|                       | NB L      | 3.0      | Α   | Watervliet Shaker Road   | EB L/TT/R     | 15.4     | В   |
| Wolf Road             | NB TT     | 3.2      | Α   | Watervliet Shaker Road   | WB LT         | 16.6     | В   |
|                       | NB R      | 3.7      | Α   | Evit F CD Off Domp       | SB L          | 24.3     | С   |
| Wolf Dood             | SB L      | 9.9      | Α   | Exit 5 SB Off-Ramp       | SB T/R        | 14.5     | В   |
| Wolf Road             | SB TT/R   | 4.5      | Α   | Sherwood Drive           | SB L/T/R      | 24.9     | С   |
| OVERALL               |           | 5.7      | Α   | OVERALL                  |               | 17.6     | В   |
| Exit 4 NB Off-Ramp &  | Wolf Road |          |     | Exit 5 NB Ramps & Wate   | ervliet Shak  | er Road  |     |
| First AND Off Dames   | EB LL     | 76.6     | E   | Water Bat Obales Das d   | EB L          | 19.6     | В   |
| Exit 4 NB Off-Ramp    | EB R      | 31.4     | С   | Watervliet Shaker Road   | EB T/R        | 6.3      | Α   |
| Wolf Bood             | NB TTT    | 11.7     | В   | Motoruliot Chalcar Dagar | WB L          | 12.9     | В   |
| Wolf Road             | SB TT     | 6.7      | Α   | Watervliet Shaker Road   | WB TT/R       | 12.1     | В   |
| OVERALL               |           | 26.0     | С   | Holly Lane               | NB L/T/R      | 34.6     | С   |
|                       |           |          |     | Evit END Off S           | SB L          | 22.7     | С   |
|                       |           |          |     | EXIT 5 NB OTT-Ramp       |               | 10.4     | В   |
|                       |           |          |     | OVERALL                  |               | 13.0     | В   |

<sup>\*</sup> Delay provided in seconds per vehicle.

# Exhibit F.10.1.1-2 VISSIM Analysis Results Intersection Level of Service 2009 Existing PM

| Intersection/Appro    | oach      | Delay *                       | LOS                      | Intersection/Approx     | ach           | Delay * | LOS |
|-----------------------|-----------|-------------------------------|--------------------------|-------------------------|---------------|---------|-----|
| Central Avenue & Wolf | Road      |                               |                          | Albany Shaker Road & V  | Volf Road     |         |     |
| Central Avenue        | EB LL     | 55.5                          | Е                        |                         | EB L          | 92.8    | F   |
| Central Avenue        | EB TT     | 20.3                          | С                        | Albany Shaker Road      | EB TT/R       | 50.4    | D   |
| Central Avenue        | WB TTT    | 40.5                          | D                        |                         | EB R          | 19.6    | В   |
| ochtrai / tveride     | WB R      | 19.3                          | В                        |                         | WB L          | 55.6    | Е   |
| Exit 2 NB Off-Ramp    | NB TTT    | 54.3                          | D                        | Albany Shaker Road      | WBTT          | 41.3    | D   |
| Wolf Road             | SB LL     | 63.7                          | Е                        |                         | WB R          | 27.0    | С   |
|                       | SB RR     | 27.6                          | С                        |                         | NB L          | 57.6    | E   |
| OVERALL               |           | 36.6                          | D                        | Wolf Road               | NB L/TT       | 62.4    | E   |
| Sand Creek Road & W   | olf Road  |                               |                          | NB R 36.2 D             |               |         |     |
|                       | EB L      | 110.8                         | F                        | OVERALL                 |               | 48.9    | D   |
| Sand Creek Road       | EB T      | 98.2                          | F                        | Albany Shaker Road & 0  | Old Wolf Roa  | d       |     |
|                       | EB R      | 49.8                          | D                        |                         | EB L          | 128.9   | F   |
|                       | WB L      | 64.4                          | Е                        | Albany Shaker Road      | EB TT         | 119.6   | F   |
| Sand Creek Road       | WB T      | 67.9                          | Е                        |                         | EB R          | 108.5   | F   |
|                       | WB R      | 16.3                          | В                        | Albany Shaker Road      | WB L          | 84.1    | F   |
|                       | NB L      | 65.0                          | Е                        | Albany Shaker Koau      | WB TT/R       | 27.8    | С   |
| Wolf Road             | NB TT     | 36.7                          | D                        | Old Wolf Road           | SB LL/T       | 76.4    | Е   |
|                       | NB R      | 13.8                          | В                        | Old Woll Road           | SB R          | 49.9    | D   |
|                       | SB L      | 70.9                          | Е                        | OVERALL                 |               | 80.3    | F   |
| Wolf Road SB          | SB TT     | 37.9                          | D                        | Old Wolf Road & CD Ro   | ad            |         |     |
|                       | SB R      | 19.0                          | В                        | Site Driveway           | EB L/T/R      | 6.3     | Α   |
| OVERALL               |           | 54.1                          | D                        | CD Road                 | WB L/T/R      | 34.7    | С   |
| Metro Park Drive & Wo | olf Road  |                               |                          | Old Wolf Road           | NB L/T/R      | 14.4    | В   |
| Hess Station          | EB L/T/R  | 36.0                          | D                        | Old Wolf Road           | SB L/T/R      | 39.1    | D   |
| Metro Park Drive      | WB L      | 43.5                          | D                        | OVERALL                 |               | 31.6    | С   |
| Mello Falk Dilve      | WB T/R    | 22.8                          | С                        | Exit 5 SB Ramps & Wate  | ervliet Shake | r Road  |     |
|                       | NB L      | 10.1                          | В                        | Watervliet Shaker Road  | EB L/TT/R     | 34.0    | С   |
| Wolf Road             | NB TT     | 14.2                          | В                        | Watervliet Shaker Road  | WB LT         | 21.2    | С   |
|                       | NB R      | 9.5                           | Α                        | Exit 5 SB Off-Ramp      | SB L          | 33.6    | С   |
| Wolf Road             | SB L      | 26.1                          | С                        | Exit 5 5b Oil-Ramp      | SB T/R        | 6.1     | Α   |
| Woll Road             | SB TT/R   | 6.0                           | Α                        | Sherwood Drive          | SB L/T/R      | 38.7    | D   |
| OVERALL               |           | 14.4                          | В                        | OVERALL                 |               | 28.4    | С   |
| Exit 4 NB Off-Ramp &  | Wolf Road |                               |                          | Exit 5 NB Ramps & Wate  | ervliet Shake | r Road  |     |
| Exit 4 NB Off-Ramp    | EB LL     | 107.9                         | F                        | Matandiat Shakar Boad   | EB L          | 30.6    | С   |
| LAR 4 NO OII-Naiiip   | EB R      | 19.8 B Watervliet Shaker Road | vvalerviiet Stiaker Kuau | EB T/R                  | 9.1           | Α       |     |
| Wolf Road             | NB TTT    | 100.6                         | F                        | Watervliet Shaker Road  | WB L          | 19.1    | В   |
| TON ROUG              | SB TT     | 4.1                           | Α                        | Tatorviiot Orianer Moau | WB TT/R       | 19.6    | В   |
| OVERALL               |           | 68.6                          | E                        | Holly Lane              | NB L/T/R      | 42.2    | D   |
|                       |           | ·                             |                          | Exit 5 NB Off-Ramp      | SB L          | 32.5    | С   |
|                       |           |                               |                          | LAIL 3 IND OIL-RAINP    | SB T/R        | 10.5    | В   |
|                       |           |                               |                          | OVERALL                 |               | 21.4    | С   |

<sup>\*</sup> Delay provided in seconds per vehicle.

 $L \! = \! Left, \, T \! = \! Through, \, R \! = \! Right, \, L/T \! = \! shared \, Left/Through, \, T/R \! = \! shared \, Through/Right$ 

## Exhibit F.10.1.1-3 VISSIM Analysis Results Intersection Level of Service 2016 (ETC) No-Build AM

| Intersection/Appro    | oach      | Delay * | LOS | Intersection/Approa                     | ach                               | Delay * | LOS |  |  |
|-----------------------|-----------|---------|-----|---|-----------------------------------|---------|-----|--|--|
| Control Avenue 8 Welf | i Dood    | -       |     | Albany Shaker Road & V                  | Valf Band                         |         |     |  |  |
| Central Avenue & Wolf | EB LL     | 40.4    |     | Albany Shaker Road & V                  | EB L                              | 41.7    |     |  |  |
| Central Avenue        | EB TT     | 20.5    | C   | Albany Shaker Road                      | EB TT/R                           | 23.0    | С   |  |  |
|                       | WB TTT    | 38.6    | D   | rabany chartor reduc                    | EB R                              | 12.7    | В   |  |  |
| Central Avenue        | WB R      | 8.8     | B   |   | WB L                              | 33.8    | С   |  |  |
| Exit 2 NB Off-Ramp    | NB TTT    | 40.4    |     | Albany Shaker Road                      | WB TT                             | 22.2    | С   |  |  |
| •                     | SB LL     | 47.5    | D   | 1                                       | WB R                              | 5.2     | A   |  |  |
| Wolf Road             | SB RR     | 7.0     | A   |   | NB L                              | 51.4    | D   |  |  |
| OVERALL               |           | 29.2    | С   | Wolf Road                               | NB L/TT                           | 38.5    | D   |  |  |
| Sand Creek Road & W   | olf Road  |         |     | 1                                       | NB R                              | 7.9     | A   |  |  |
|                       | EB L      | 31.1    | С   | OVERALL                                 |                                   | 25.1    | С   |  |  |
| Sand Creek Road       | EB T      | 28.1    | С   | Albany Shaker Road & C                  | old Wolf Roa                      | ad      |     |  |  |
|                       | EB R      | 2.4     | A   | , | EB L                              | 47.4    | D   |  |  |
|                       | WB L      | 35.8    | D   | Albany Shaker Road                      | EB TT                             | 45.5    | D   |  |  |
| Sand Creek Road       | WB T      | 32.0    | С   | 1                                       | EB R                              | 32.8    | С   |  |  |
|                       | WB R      | 5.2     | Α   | Alle a con Objetion Based               | WB L                              | 67.2    | Е   |  |  |
|                       | NB L      | 42.9    | D   | Albany Shaker Road                      | WB TT/R                           | 24.4    | С   |  |  |
| Wolf Road             | NB TT     | 13.1    | В   | Old Wolf Road                           | SB LL/T                           | 81.6    | F   |  |  |
|                       | NB R      | 6.1     | Α   | Old Woll Road                           | SB R                              | 66.9    | Е   |  |  |
|                       | SB L      | 47.9    | D   | OVERALL                                 |                                   | 50.7    | D   |  |  |
| Wolf Road SB TT       |           | 19.7    | В   | Old Wolf Road & CD Roa                  | ad                                |         |     |  |  |
|                       | SB R      | 9.8     | Α   | Site Driveway                           | EB L/T/R                          | 8.9     | Α   |  |  |
| OVERALL               |           | 20.4    | С   | CD Road                                 | WB L/T/R                          | 70.0    | Е   |  |  |
| Metro Park & Wolf Roa | ad        |         |     | Old Wolf Road                           | NB L/T/R                          | 42.9    | D   |  |  |
| Hess Station          | EB L/T/R  | 33.9    | С   | Old Wolf Road                           | SB L/T/R                          | 243.3   | F   |  |  |
| Metro Park Drive      | WB L      | 42.9    | D   | OVERALL                                 |                                   | 92.1    | F   |  |  |
| Well of alk Blive     | WB T/R    | 9.3     | Α   | Exit 5 SB Ramps & Wate                  | SB Ramps & Watervliet Shaker Road |         |     |  |  |
|                       | NB L      | 3.3     | А   | Watervliet Shaker Road                  | EB L/TT/R                         | 16.4    | В   |  |  |
| Wolf Road             | NB TT     | 2.0     | Α   | Watervliet Shaker Road                  | WB LT                             | 18.8    | В   |  |  |
|                       | NB R      | 3.9     | Α   | Exit 5 SB Off-Ramp                      | SB L                              | 24.5    | С   |  |  |
| Wolf Road             | SB L      | 4.5     | Α   |   | SB T/R                            | 13.8    | В   |  |  |
|                       | SB TT/R   | 2.9     | Α   | Sherwood Drive                          | SB L/T/R                          | 25.8    | С   |  |  |
| OVERALL               |           | 3.7     | Α   | OVERALL                                 |                                   | 19.3    | В   |  |  |
| Exit 4 NB Off-Ramp &  | Wolf Road |         |     | Exit 5 NB Ramps & Wate                  | ervliet Shake                     | er Road |     |  |  |
| Exit 4 NB Off-Ramp    | EB LL     | 56.4    | E   | Watervliet Shaker Road                  | EB L                              | 20.2    | С   |  |  |
| - 1                   | EB R      | 16.6    | В   |   | EB T/R                            | 10.4    | В   |  |  |
| Wolf Road             | NB TTT    | 11.6    | В   | Watervliet Shaker Road                  | WB L                              | 10.7    | В   |  |  |
|                       | SB TT     | 9.1     | Α   |   | WB TT/R                           | 12.2    | В   |  |  |
| OVERALL               |           | 20.5    | С   | Holly Lane                              | NB L/T/R                          | 30.7    | С   |  |  |
|                       |           |         |     | Exit 5 NB Off-Ramp                      | SB L                              | 23.3    | С   |  |  |
|                       |           |         |     |   | SB T/R                            | 10.7    | В   |  |  |
|                       |           |         |     | OVERALL                                 |                                   | 13.6    | В   |  |  |

<sup>\*</sup> Delay provided in seconds per vehicle.

## Exhibit F.10.1.1-4 VISSIM Analysis Results Intersection Level of Service 2016 (ETC) No-Build PM

| Intersection/Appr     | oach      | Delay * | LOS | Intersection/Approa     | ach          | Delay *  | LOS |
|-----------------------|-----------|---------|-----|-------------------------|--------------|----------|-----|
| Central Avenue & Wol  | f Road    |         |     | Albany Shaker Road & V  | Volf Road    |          |     |
| Control Assesse       | EB LL     | 55.0    | D   |                         | EB L         | 132.3    | F   |
| Central Avenue        | EB TT     | 19.5    | В   | Albany Shaker Road      | EB TT/R      | 27.0     | С   |
| Control Avenue        | WB TTT    | 43.6    | D   |                         | EB R         | 10.1     | В   |
| Central Avenue        | WB R      | 18.8    | В   |                         | WB L         | 24.5     | С   |
| Exit 2 NB Off-Ramp    | NB TTT    | 54.0    | D   | Albany Shaker Road      | WBTT         | 36.8     | D   |
| Wolf Dood             | SB LL     | 58.1    | E   |                         | WB R         | 33.2     | С   |
| Wolf Road             | SB RR     | 27.3    | С   |                         | NB L         | 67.4     | Е   |
| OVERALL               |           | 37.4    | D   | Wolf Road               | NB L/TT      | 72.3     | Е   |
| Sand Creek Road & W   | olf Road  |         |     | NB R 12.9               |              |          |     |
|                       | EB L      | 128.3   | F   | OVERALL                 |              | 48.5     | D   |
| Sand Creek Road       | EB T      | 101.5   | F   | Albany Shaker Road & C  | Old Wolf Roa | d        |     |
|                       | EB R      | 55.0    | D   |                         | EB L         | 416.1    | F   |
|                       | WB L      | 158.4   | F   | Albany Shaker Road      | EB TT        | 330.6    | F   |
| Sand Creek Road       | WB T      | 170.3   | F   | 1                       | EB R         | 242.7    | F   |
|                       | WB R      | 90.0    | F   |                         | WB L         | 85.6     | F   |
|                       | NB L      | 68.4    | Е   | Albany Shaker Road      | WB TT/R      | 31.4     | С   |
| Wolf Road             | NB TT     | 36.5    | D   |                         | SB LL/T      | 70.0     | E   |
|                       | NB R      | 14.4    | В   | Old Wolf Road           | SB R         | 46.1     | D   |
|                       | SB L      | 66.3    | Е   | OVERALL                 |              | 149.7    | F   |
| Wolf Road             | SB TT     | 36.8    | D   | Old Wolf Road & CD Roa  | ad           | <u> </u> |     |
|                       | SB R      | 19.0    | В   | Site Driveway           | EB L/T/R     | 6.3      | A   |
| OVERALL               |           | 71.0    | E   | CD Road                 | WB L/T/R     | 27.0     | С   |
| Metro Park Drive & Wo | olf Road  |         |     | Old Wolf Road           | NB L/T/R     | 14.2     | В   |
| Hess Station          | EB L/T/R  | 40.6    | D   | Old Wolf Road           | SB L/T/R     | 27.5     | С   |
|                       | WB L      | 48.9    | D   | OVERALL                 |              | 24.4     | С   |
| Metro Park Drive      | WB T/R    | 38.1    | D   | Exit 5 SB Ramps & Water | ryliet Shake | <u> </u> |     |
|                       | NB L      | 25.0    | С   | Watervliet Shaker Road  | EB L/TT/R    | 43.2     | D   |
| Wolf Road             | NB TT     | 28.8    | С   | Watervliet Shaker Road  | WB LT        | 22.8     | С   |
|                       | NB R      | 25.8    | С   | Trater met enaner read  | SBL          | 34.2     | С   |
|                       | SB L      | 11.7    | В   | Exit 5 SB Off-Ramp      | SB T/R       | 22.0     | С   |
| Wolf Road             | SB TT/R   | 5.2     | A   | Sherwood Drive          | SB L/T/R     | 43.9     | D   |
| OVERALL               | 02        | 21.0    | С   | OVERALL                 | 00 2, 1,11   | 32.1     | С   |
| Exit 4 NB Off-Ramp &  | Wolf Road |         |     | Exit 5 NB Ramps & Water | rvliet Shake |          |     |
| Exit 4 NB OII-Namp a  | EB LL     | 80.5    | F   | Exit 5 NB Ramps & Wate  | EB L         | 27.0     | С   |
| Exit 4 NB Off-Ramp    | EB R      | 7.6     | A   | Watervliet Shaker Road  | EB T/R       | 10.0     | В   |
|                       | NB TTT    | 182.9   | F   |                         | WB L         | 14.1     | В   |
| Wolf Road             | SB TT     | 6.4     | A   | Watervliet Shaker Road  | WB TT/R      | 19.2     | В   |
| OVERALL               | 05 11     | 105.6   |     | Holly Lane              | NB L/T/R     | 41.0     | D   |
| O V E I W LEE         |           | 103.0   | •   | Je lony Edillo          |              |          |     |
|                       |           |         |     | Exit 5 NB Off-Ramp      | SB L         | 31.0     | C   |
|                       |           |         |     | OVERALL                 | SB T/R       | 10.0     | A   |
|                       |           |         |     | OVERALL                 |              | 20.3     | С   |

<sup>\*</sup> Delay provided in seconds per vehicle.

 $L \! = \! Left, \, T \! = \! Through, \, R \! = \! Right, \, L/T \! = \! shared \, Left/Through, \, T/R \! = \! shared \, Through/Right$ 

## Exhibit F.10.1.1-5 VISSIM Analysis Results Intersection Level of Service 2026 (ETC+10) No-Build AM

| Intersection/Appr     | oach      | Delay * | LOS | Intersection/Approa       | nch          | Delay * | LOS |
|-----------------------|-----------|---------|-----|---------------------------|--------------|---------|-----|
| Central Avenue & Wol  | f Road    |         |     | Albany Shaker Road & V    | Volf Road    |         |     |
| Central Avenue        | EB LL     | 41.8    | D   |                           | EB L         | 32.2    | С   |
| Ceritial Avenue       | EB TT     | 21.0    | С   | Albany Shaker Road        | EB TT/R      | 22.6    | С   |
| Central Avenue        | WB TTT    | 39.5    | D   |                           | EB R         | 12.3    | В   |
| Central Avenue        | WB R      | 9.0     | Α   |                           | WB L         | 31.4    | С   |
| Exit 2 NB Off-Ramp    | NB TTT    | 40.4    | D   | Albany Shaker Road        | WB TT        | 22.2    | С   |
| Wolf Road             | SB LL     | 46.6    | D   |                           | WB R         | 5.2     | Α   |
|                       | SB RR     | 7.0     | Α   |                           | NB L         | 52.0    | D   |
| OVERALL               |           | 29.6    | С   | Wolf Road                 | NB L/TT      | 37.4    | D   |
| Sand Creek Road & W   | olf Road  |         |     |                           | NB R         | 8.3     | Α   |
|                       | EB L      | 31.1    | С   | OVERALL                   |              | 24.4    | С   |
| Sand Creek Road       | EB T      | 28.0    | С   | Albany Shaker Road & C    | old Wolf Roa | ad      |     |
|                       | EB R      | 2.5     | А   |                           | EB L         | 46.3    | D   |
|                       | WB L      | 37.5    | D   | Albany Shaker Road        | EB TT        | 44.1    | D   |
| Sand Creek Road       | WB T      | 32.9    | С   |                           | EB R         | 31.4    | С   |
|                       | WB R      | 5.1     | Α   | Albany Shaker Road        | WB L         | 71.9    | Е   |
|                       | NB L      | 44.9    | D   | Albarry Shaker Road       | WB TT/R      | 25.8    | С   |
| Wolf Road             | NB TT     | 14.4    | В   | Old Wolf Road             | SB LL/T      | 81.5    | F   |
|                       | NB R      | 6.6     | Α   | Old Woll Road             | SB R         | 70.9    | Е   |
|                       | SB L      | 52.0    | D   | OVERALL                   |              | 51.4    | D   |
| Wolf Road SB T        | SB TT     | 20.5    | С   | Old Wolf Road & CD Roa    | ad           |         |     |
|                       | SB R      | 9.4     | А   | Site Driveway             | EB L/T/R     | 8.9     | Α   |
| OVERALL               |           | 21.3    | С   | CD Road                   | WB L/T/R     | 73.9    | Е   |
| Metro Park & Wolf Roa | ad        |         |     | Old Wolf Road             | NB L/T/R     | 46.6    | D   |
| Hess Station          | EB L/T/R  | 33.7    | С   | Old Wolf Road             | SB L/T/R     | 262.3   | F   |
| Metro Park Drive      | WB L      | 39.5    | D   | OVERALL                   |              | 102.8   | F   |
| iviello Faik Diive    | WB T/R    | 7.9     | Α   | Exit 5 SB Ramps & Wate    | rvliet Shake | er Road |     |
|                       | NB L      | 2.9     | Α   | Watervliet Shaker Road    | EB L/TT/R    | 16.1    | В   |
| Wolf Road             | NB TT     | 2.1     | Α   | Watervliet Shaker Road    | WB LT        | 18.2    | В   |
|                       | NB R      | 4.3     | Α   | Exit 5 SB Off-Ramp        | SB L         | 26.7    | С   |
| Wolf Road             | SB L      | 5.0     | Α   | Exit 5 3B Oil-Rainp       | SB T/R       | 15.7    | В   |
| Woll Road             | SB TT/R   | 3.1     | Α   | Sherwood Drive            | SB L/T/R     | 26.4    | С   |
| OVERALL               |           | 4.0     | Α   | OVERALL                   |              | 19.5    | В   |
| Exit 4 NB Off-Ramp &  | Wolf Road |         |     | Exit 5 NB Ramps & Wate    | rvliet Shake | er Road |     |
| Exit 4 NB Off-Ramp    | EB LL     | 58.4    | Е   | Watervliet Shaker Road    | EB L         | 22.4    | С   |
| EXIT 4 IND OII-Naiiip | EB R      | 18.1    | В   | Water viiet Stiaker Noau  | EB T/R       | 10.9    | В   |
| Wolf Road             | NB TTT    | 12.1    | В   | Watervliet Shaker Road    | WB L         | 10.8    | В   |
| TTOII TOUG            | SB TT     | 8.6     | Α   | Traterviiet Orianer Road  | WB TT/R      | 14.1    | В   |
| OVERALL               |           | 21.4    | С   | Holly Lane                | NB L/T/R     | 37.4    | D   |
|                       | _         |         |     | Evit 5 NR Off-Domo        | SB L         | 23.6    | С   |
|                       |           |         |     | Exit 5 NB Off-Ramp SB T/R |              |         | В   |
|                       |           |         |     | OVERALL                   |              | 15.0    | В   |

<sup>\*</sup> Delay provided in seconds per vehicle.

## Exhibit F.10.1.1-6 VISSIM Analysis Results Intersection Level of Service 2026 (ETC+10) No-Build PM

| Intersection/Appro     | oach      | Delay *  | LOS | Intersection/Approa       | ach           | Delay * | LOS |
|------------------------|-----------|--|-----|---------------------------|---------------|---------|-----|
| Central Avenue & Wolf  | Road      |  |     | Albany Shaker Road & V    | Volf Road     |         |     |
| Central Avenue         | EB LL     | 55.7   | Е   |                           | EB L          | 132.4   | F   |
| Ochtral Avenue         | EB TT     | 20.1   | С   | Albany Shaker Road        | EB TT/R       | 30.4    | С   |
| Central Avenue         | WB TTT    | 47.8   | D   |                           | EB R          | 11.2    | В   |
| ochtrai / tvenae       | WB R      | 23.1   | С   |                           | WB L          | 27.2    | С   |
| Exit 2 NB Off-Ramp     | NB TTT    | 55.0   | D   | Albany Shaker Road        | WBTT          | 39.5    | D   |
| Wolf Road              | SB LL     | 63.5   | Е   |                           | WB R          | 40.2    | D   |
|                        | SB RR     | 29.8   | С   | ]                         | NB L          | 67.6    | Е   |
| OVERALL                |           | 40.1   | D   | Wolf Road                 | NB L/TT       | 73.4    | E   |
| Sand Creek Road & Wo   | olf Road  |  |     |                           | NB R          | 12.7    | В   |
|                        | EB L      | 130.9  | F   | OVERALL                   |               | 49.8    | D   |
| Sand Creek Road        | EB T      | 111.9  | F   | Albany Shaker Road & 0    | Old Wolf Roa  | d       |     |
|                        | EB R      | 64.6   | Е   |                           | EB L          | 510.2   | F   |
|                        | WB L      | 183.9  | F   | Albany Shaker Road        | EB TT         | 420.7   | F   |
| Sand Creek Road        | WB T      | 197.0  | F   | 1                         | EB R          | 358.8   | F   |
|                        | WB R      | 112.8  | F   | Albany Shaker Road        | WB L          | 88.3    | F   |
|                        | NB L      | 70.5   | Е   | Albany Shaker Road        | WB TT/R       | 32.4    | С   |
| Wolf Road              | NB TT     | 41.4   | D   | Old Wolf Road             | SB LL/T       | 73.9    | Е   |
|                        | NB R      | 20.4   | С   | Old Woll Road             | SB R          | 49.4    | D   |
|                        | SB L      | 67.9   | Е   | OVERALL                   |               | 190.0   | F   |
| Wolf Road              | SB TT     | 37.0   | D   | Old Wolf Road & CD Ro     | ad            |         |     |
|                        | SB R      | 19.1   | В   | Site Driveway             | EB L/T/R      | 6.4     | Α   |
| OVERALL                |           | 76.9   | E   | CD Road                   | WB L/T/R      | 30.1    | С   |
| Metro Park Drive & Wo  | If Road   |  |     | Old Wolf Road             | NB L/T/R      | 16.2    | В   |
| Hess Station           | EB L/T/R  | 41.6   | D   | Old Wolf Road             | SB L/T/R      | 24.1    | С   |
|                        | WB L      | 49.4   | D   | OVERALL                   |               | 25.5    | С   |
| Metro Park Drive       | WB T/R    | 35.0   | С   | Exit 5 SB Ramps & Wate    | ervliet Shake | r Road  |     |
|                        | NB L      | 41.0   | D   | Watervliet Shaker Road    | EB L/TT/R     | 53.0    | D   |
| Wolf Road              | NB TT     | 44.6   | D   | Watervliet Shaker Road    | WB LT         | 24.0    | С   |
|                        | NB R      | 39.4   | D   | E :: 5 0D 0" D            | SB L          | 35.2    | D   |
| M 1/ D                 | SB L      | 13.3   | В   | Exit 5 SB Off-Ramp        | SB T/R        | 24.9    | С   |
| Wolf Road              | SB TT/R   | 5.3  | Α   | Sherwood Drive            | SB L/T/R      | 48.8    | D   |
| OVERALL                |           | 29.9   | С   | OVERALL                   |               | 36.6    | D   |
| Exit 4 NB Off-Ramp & V | Wolf Road | <u> </u>                                       |     | Exit 5 NB Ramps & Wate    | ervliet Shake | r Road  |     |
|                        | EB LL     | 86.0   | F   |                           | EB L          | 30.0    | С   |
| Exit 4 NB Off-Ramp     | EB R      | 8.0  | А   | Watervliet Shaker Road    | EB T/R        | 11.0    | В   |
|                        | NB TTT    | 193.7  | F   |                           | WB L          | 14.6    | В   |
| Wolf Road              | SB TT     | 6.0  | Α   |                           | WB TT/R       | 20.2    | С   |
| OVERALL                |           | 111.0  | F   | Holly Lane                | NB L/T/R      | 33.9    | С   |
|                        |           | <u>.                                      </u> |     |                           | SB L          | 32.1    | С   |
|                        |           |  |     | Exit 5 NB Off-Ramp SB T/R |               | 10.5    | В   |
|                        |           |  |     | OVERALL                   | 32 .//(       | 21.7    | C   |

<sup>\*</sup> Delay provided in seconds per vehicle.

 $L \! = \! Left, \, T \! = \! Through, \, R \! = \! Right, \, L/T \! = \! shared \, Left/Through, \, T/R \! = \! shared \, Through/Right$ 

## Exhibit F.10.1.1-7 VISSIM Analysis Results Intersection Level of Service 2036 (ETC+20) No-Build AM

| Intersection/Appro    | oach      | Delay * | LOS | Intersection/Approa      | ıch                                      | Delay * | LOS |
|-----------------------|-----------|---------|-----|--------------------------|--|---------|-----|
| Central Avenue & Wolf | f Road    |         |     | Albany Shaker Road & V   | olf Road                                 |         |     |
| Central Avenue        | EB LL     | 43.9    | D   |                          | EB L                                     | 39.8    | D   |
| Central Avenue        | EB TT     | 21.4    | С   | Albany Shaker Road       | EB TT/R                                  | 22.9    | С   |
| Central Avenue        | WB TTT    | 39.1    | D   |                          | EB R                                     | 12.0    | В   |
| ochtrai / tveride     | WB R      | 9.3     | Α   |                          | WB L                                     | 24.3    | С   |
| Exit 2 NB Off-Ramp    | NB TTT    | 42.0    | D   | Albany Shaker Road       | WB TT                                    | 21.3    | С   |
| Wolf Road             | SB LL     | 46.9    | D   |                          | WB R                                     | 3.4     | Α   |
|                       | SB RR     | 7.3     | Α   |                          | NB L                                     | 49.8    | D   |
| OVERALL               |           | 30.4    | С   | Wolf Road                | NB L/TT                                  | 38.2    | D   |
| Sand Creek Road & W   | olf Road  |         |     |                          | NB R                                     | 8.6     | Α   |
|                       | EB L      | 34.4    | С   | OVERALL                  |  | 24.4    | С   |
| Sand Creek Road       | EB T      | 30.5    | С   | Albany Shaker Road & C   | ld Wolf Roa                              | nd      |     |
|                       | EB R      | 2.7     | Α   | EB L                     |  | 49.7    | D   |
|                       | WB L      | 35.4    | D   | Albany Shaker Road       | EB TT                                    | 42.3    | D   |
| Sand Creek Road       | WB T      | 32.8    | С   |                          | EB R                                     | 28.2    | С   |
|                       | WB R      | 5.9     | А   | Albany Shaker Road       | WB L                                     | 28.0    | С   |
|                       | NB L      | 46.4    | D   | Albany Shaker Road       | WB TT/R                                  | 42.0    | D   |
| Wolf Road             | NB TT     | 15.2    | В   | Old Wolf Road            | SB LL/T                                  | 83.9    | F   |
|                       | NB R      | 8.0     | А   | Old Woll Road            | SB R                                     | 72.1    | Е   |
|                       | SB L      | 45.6    | D   | OVERALL                  |  | 53.7    | D   |
| Wolf Road             | SB TT     | 22.0    | С   | Old Wolf Road & CD Roa   | nd                                       |         |     |
|                       | SB R      | 10.0    | В   | Site Driveway            | EB L/T/R                                 | 9.4     | А   |
| OVERALL               |           | 22.5    | С   | CD Road                  | WB L/T/R                                 | 69.3    | Е   |
| Metro Park & Wolf Roa | ad        |         |     | Old Wolf Road            | NB L/T/R                                 | 44.8    | D   |
| Hess Station          | EB L/T/R  | 30.2    | С   | Old Wolf Road            | SB L/T/R                                 | 328.7   | F   |
| Matra Dauls Drive     | WB L      | 44.9    | D   | OVERALL                  |  | 115.2   | F   |
| Metro Park Drive      | WB T/R    | 9.1     | А   | Exit 5 SB Ramps & Wate   | Exit 5 SB Ramps & Watervliet Shaker Road |         |     |
|                       | NB L      | 3.1     | Α   | Watervliet Shaker Road   | EB L/TT/R                                | 17.6    | В   |
| Wolf Road             | NB TT     | 2.1     | Α   | Watervliet Shaker Road   | WB LT                                    | 18.3    | В   |
|                       | NB R      | 4.1     | Α   | Evit C CD Off Domes      | SB L                                     | 26.3    | С   |
| Wolf Road             | SB L      | 3.2     | Α   | Exit 5 SB Off-Ramp       | SB T/R                                   | 17.1    | В   |
| Woll Road             | SB TT/R   | 2.6     | Α   | Sherwood Drive           | SB L/T/R                                 | 26.5    | С   |
| OVERALL               |           | 3.7     | Α   | OVERALL                  |  | 19.6    | В   |
| Exit 4 NB Off-Ramp &  | Wolf Road |         |     | Exit 5 NB Ramps & Wate   | rvliet Shake                             | er Road |     |
| Fuit 4 ND Off Dames   | EB LL     | 59.9    | E   | Materialist Challes Dand | EB L                                     | 24.2    | С   |
| Exit 4 NB Off-Ramp    | EB R      | 17.2    | В   | Watervliet Shaker Road   | EB T/R                                   | 10.0    | Α   |
| Wolf Road             | NB TTT    | 13.2    | В   | Water Bat City S         | WB L                                     | 13.0    | В   |
| WYOII NUAU            | SB TT     | 9.3     | Α   | Watervliet Shaker Road   | WB TT/R                                  | 15.1    | В   |
| OVERALL               |           | 22.6    | С   | Holly Lane               | NB L/T/R                                 | 38.7    | D   |
|                       |           |         |     | Evit 5 ND OV 5           | SB L                                     | 25.4    | С   |
|                       |           |         |     | Exit 5 NB Off-Ramp       |  | 12.1    | В   |
|                       |           |         |     | OVERALL                  |  | 15.8    | В   |

<sup>\*</sup> Delay provided in seconds per vehicle.

## Exhibit F.10.1.1-8 VISSIM Analysis Results Intersection Level of Service 2036 (ETC+20) No-Build PM

| Intersection/Appro     | oach      | Delay * | LOS | Intersection/Approx      | ach           | Delay * | LOS |
|------------------------|-----------|---------|-----|--------------------------|---------------|---------|-----|
| Central Avenue & Wolf  | Road      |         |     | Albany Shaker Road & \   | Wolf Road     |         |     |
| Central Avenue         | EB LL     | 58.0    | Е   |                          | EB L          | 111.8   | F   |
| Central Avenue         | EB TT     | 21.0    | С   | Albany Shaker Road       | EB TT/R       | 29.2    | С   |
| Central Avenue         | WB TTT    | 42.7    | D   |                          | EB R          | 11.1    | В   |
| Central Avenue         | WB R      | 25.3    | С   |                          | WB L          | 28.2    | С   |
| Exit 2 NB Off-Ramp     | NB TTT    | 56.5    | Е   | Albany Shaker Road       | WBTT          | 38.6    | D   |
| Wolf Road              | SB LL     | 64.8    | Е   |                          | WB R          | 34.8    | С   |
| Woll Road              | SB RR     | 30.5    | С   |                          | NB L          | 55.3    | E   |
| OVERALL                |           | 39.3    | D   | Wolf Road                | NB L/TT       | 70.8    | Е   |
| Sand Creek Road & Wo   | olf Road  |         |     |                          | NB R          | 12.0    | В   |
|                        | EB L      | 142.4   | F   | OVERALL                  |               | 44.8    | D   |
| Sand Creek Road        | EB T      | 124.3   | F   | Albany Shaker Road & 0   | Old Wolf Roa  | d       |     |
|                        | EB R      | 74.7    | Е   |                          | EB L          | 518.3   | F   |
|                        | WB L      | 190.3   | F   | Albany Shaker Road       | EB TT         | 459.7   | F   |
| Sand Creek Road        | WB T      | 203.3   | F   |                          | EB R          | 447.0   | F   |
|                        | WB R      | 120.4   | F   | Albany Shaker Road       | WB L          | 88.7    | F   |
|                        | NB L      | 70.9    | E   | Albany Shaker Road       | WB TT/R       | 33.8    | С   |
| Wolf Road              | NB TT     | 39.4    | D   | Old Wolf Road            | SB LL/T       | 72.3    | Е   |
|                        | NB R      | 18.5    | В   | Old Woll Road            | SB R          | 48.0    | D   |
|                        | SB L      | 66.7    | E   | OVERALL                  |               | 212.1   | F   |
| Wolf Road              | SB TT     | 37.9    | D   | Old Wolf Road & CD Ro    | ad            |         |     |
|                        | SB R      | 21.1    | С   | Site Driveway            | EB L/T/R      | 6.3     | Α   |
| OVERALL                |           | 78.6    | E   | CD Road                  | WB L/T/R      | 37.5    | D   |
| Metro Park Drive & Wo  | If Road   |         |     | Old Wolf Road            | NB L/T/R      | 15.9    | В   |
| Hess Station           | EB L/T/R  | 45.4    | D   | Old Wolf Road            | SB L/T/R      | 28.7    | С   |
| Matra Dauls Drive      | WB L      | 54.0    | D   | OVERALL                  |               | 30.7    | С   |
| Metro Park Drive       | WB T/R    | 39.0    | D   | Exit 5 SB Ramps & Wate   | ervliet Shake | r Road  |     |
|                        | NB L      | 54.2    | D   | Watervliet Shaker Road   | EB L/TT/R     | 63.3    | E   |
| Wolf Road              | NB TT     | 43.8    | D   | Watervliet Shaker Road   | WB LT         | 25.9    | С   |
|                        | NB R      | 32.4    | С   | Evit 5 SD Off Domp       | SB L          | 36.1    | D   |
| Wolf Road              | SB L      | 12.1    | В   | Exit 5 SB Off-Ramp       | SB T/R        | 28.0    | С   |
| Woll Road              | SB TT/R   | 4.5     | А   | Sherwood Drive           | SB L/T/R      | 56.0    | Е   |
| OVERALL                |           | 29.5    | С   | OVERALL                  |               | 41.5    | D   |
| Exit 4 NB Off-Ramp & \ | Nolf Road |         |     | Exit 5 NB Ramps & Wate   | ervliet Shake | r Road  |     |
| Evit 4 NP Off Pamp     | EB LL     | 99.3    | F   | Wateryliet Sheker Bood   | EB L          | 30.4    | С   |
| Exit 4 NB Off-Ramp     | EB R      | 10.1    | В   | Watervliet Shaker Road   | EB T/R        | 10.8    | В   |
| Wolf Road              | NB TTT    | 198.5   | F   | F Watervliet Shaker Road | WB L          | 18.9    | В   |
| woii Noau              | SB TT     | 5.7     | Α   | vidicivilet ollakei Nodu | WB TT/R       | 21.5    | С   |
| OVERALL                |           | 115.2   | F   | Holly Lane               | NB L/T/R      | 39.5    | D   |
|                        |           |         |     | Evit 5 ND Off Dame       | SB L          | 32.5    | С   |
|                        |           |         |     | Exit 5 NB Off-Ramp       | SB T/R        | 10.9    | В   |
|                        |           |         |     | OVERALL                  |               | 22.2    | С   |

<sup>\*</sup> Delay provided in seconds per vehicle.

 $L \! = \! Left, \, T \! = \! Through, \, R \! = \! Right, \, L/T \! = \! shared \, Left/Through, \, T/R \! = \! shared \, Through/Right$ 

## Exhibit F.10.1.1-9 VISSIM Analysis Results Intersection Level of Service 2046 (ETC+30) No-Build AM

| Intersection/Appro             | oach      | Delay * | LOS           | Intersection/Appro                 | oach    | Delay * | LOS |  |  |
|--------------------------------|-----------|---------|---------------|------------------------------------|---------|---------|-----|--|--|
| Exit 4 NB Off-Ramp & \         | Nolf Road |         |               | Albany Shaker Road & Old Wolf Road |         |         |     |  |  |
| Exit 4 NB Off-Ramp             | EB LL     | 104.5   | F             |                                    | EB L    | 64.3    | E   |  |  |
| LXII 4 NB OII-Ramp             | EB R      | 49.6    | D             | Albany Shaker Road                 | EB TT   | 53.3    | D   |  |  |
| Wolf Road                      | NB TTT    | 18.5    | В             |                                    | EB R    | 49.8    | D   |  |  |
| Woll Road                      | SB TT     | 9.1     | Α             | Albany Shaker Road                 | WB L    | 26.7    | С   |  |  |
| OVERALL                        |           | 38.5    | D             |                                    | WB TT/R | 42.1    | D   |  |  |
| Albany Shaker Road & Wolf Road |           |         | Old Wolf Road | SB LL/T                            | 89.3    | F       |     |  |  |
|                                | EB L      | 32.8    | С             | Old Woll Road                      | SB R    | 76.5    | Е   |  |  |
| Albany Shaker Road             | EB TT/R   | 23.2    | С             | OVERALL                            |         | 58.7    | E   |  |  |
|                                | EB R      | 12.7    | В             |                                    |         |         |     |  |  |
|                                | WB L      | 28.8    | С             | 1                                  |         |         |     |  |  |
| Albany Shaker Road             | WB TT     | 23.4    | С             |                                    |         |         |     |  |  |
|                                | WB R      | 5.5     | Α             | 1                                  |         |         |     |  |  |
|                                | NB L      | 51.2    | D             |                                    |         |         |     |  |  |
| Wolf Road                      | NB L/TT   | 44.5    | D             |                                    |         |         |     |  |  |
|                                | NB R      | 8.5     | Α             |                                    |         |         |     |  |  |
| OVERALL                        |           | 25.5    | С             |                                    |         |         |     |  |  |

<sup>\*</sup> Delay provided in seconds per vehicle.

## Exhibit F.10.1.1-10 VISSIM Analysis Results Intersection Level of Service 2046 (ETC+30) No-Build PM

| Intersection/Appro             | oach      | Delay * | LOS           | Intersection/Appr    | oach         | Delay * | LOS |
|--------------------------------|-----------|---------|---------------|----------------------|--------------|---------|-----|
| Exit 4 NB Off-Ramp &           | Wolf Road |         |               | Albany Shaker Road & | Old Wolf Roa | d       |     |
| Exit 4 NB Off-Ramp             | EB LL     | 137.7   | F             |                      | EB L         | 469.8   | F   |
| LXII 4 NB OII-Namp             | EB R      | 25.9    | С             | Albany Shaker Road   | EB TT        | 424.4   | F   |
| Wolf Road                      | NB TTT    | 339.6   | F             |                      | EB R         | 500.6   | F   |
| Woll Road                      | SB TT     | 5.9     | Α             | Albany Shaker Road   | WB L         | 96.1    | F   |
| OVERALL                        |           | 169.6   | F             | Albarry Shaker Road  | WB TT/R      | 41.8    | D   |
| Albany Shaker Road & Wolf Road |           |         | Old Wolf Road | SB LL/T              | 95.5         | F       |     |
|                                | EB L      | 95.4    | F             | Old Woll Road        | SB R         | 73.8    | Е   |
| Albany Shaker Road             | EB TT/R   | 36.3    | D             | OVERALL              |              | 214.6   | F   |
|                                | EB R      | 14.7    | В             |                      |              |         |     |
|                                | WB L      | 35.0    | D             | 1                    |              |         |     |
| Albany Shaker Road             | WBTT      | 44.0    | D             | 1                    |              |         |     |
|                                | WB R      | 29.3    | С             | 1                    |              |         |     |
|                                | NB L      | 61.0    | Е             | 1                    |              |         |     |
| Wolf Road                      | NB L/TT   | 55.3    | E             | 1                    |              |         |     |
|                                | NB R      | 10.2    | В             | ]                    |              |         |     |
| OVERALL                        |           | 43.0    | D             | ]                    |              |         |     |

<sup>\*</sup> Delay provided in seconds per vehicle.

#### 10.1.2 Freeway Level of Service

Freeway analyses for I-87 were conducted in accordance with the Highway Capacity Manual (HCM2000) using HCS+. The analyses were conducted for the freeway segments between Exits 2 and 4, Exits 4 and 5, Exits 5 and 6, and on the segments on the bridge over Albany-Shaker Road. Ramp junctions were evaluated at Exits 2, 4 and 5. Weave areas were evaluated at Exit 2. All of these analyses were conducted for Existing, ETC, ETC+10 and ETC+20. The freeway segment over Albany-Shaker Road was also evaluated for ETC+30. The level of service worksheets for all of the freeway analyses are provided in Attachment E.

The results of the AM and PM peak hour Existing and No-Build freeway analyses are summarized in Exhibits 2.3.1.7 c, 2.3.1.7 d, F.10.1.2-1 and F.10.1.2-2.

| Exhibit 2.3.1.7 c Freeway Level of Service 2009 Existing AM Peak Hour |                                     |                     |        |  |  |  |  |  |  |  |
|---|-------------------------------------|---------------------|--------|--|--|--|--|--|--|--|
|   |                                     | Existing            | (2009) |  |  |  |  |  |  |  |
| Direction   | Segment/Junction                    | Density<br>pc/mi/ln | LOS    |  |  |  |  |  |  |  |
|   | FREEWAY SEGMENTS                    |                     |        |  |  |  |  |  |  |  |
|   | Exit 2W on to Exit 4 off            | 19.6                | С      |  |  |  |  |  |  |  |
| NB  | Exit 4 off to Exit 4 on             | 14.4                | В      |  |  |  |  |  |  |  |
| IND   | Exit 4 on to Exit 5 off             | 17.6                | В      |  |  |  |  |  |  |  |
|   | Exit 5 on to Exit 6 off             | 12.3                | В      |  |  |  |  |  |  |  |
|   | Exit 6 on to Exit 5 off             | 29.9                | D      |  |  |  |  |  |  |  |
| SB  | Exit 4 off to Exit 5 on             | 28.8                | D      |  |  |  |  |  |  |  |
| OD.   | Exit 5 on to Exit 4 on              | 30.1                | D      |  |  |  |  |  |  |  |
|   | Exit 4 on to Exit 2W off            | 33.8                | D      |  |  |  |  |  |  |  |
|   | RAMP JUNCTIONS                      | }                   |        |  |  |  |  |  |  |  |
|   | Exit 2W on-ramp                     | 16.5                | В      |  |  |  |  |  |  |  |
| NB  | Exit 4 off-ramp                     | 22.2                | С      |  |  |  |  |  |  |  |
| 110   | Exit 4 on-ramp                      | 15.6                | В      |  |  |  |  |  |  |  |
|   | Exit 5 off-ramp                     | 21.2                | С      |  |  |  |  |  |  |  |
|   | Exit 4 off-ramp                     | 33.3                | D      |  |  |  |  |  |  |  |
| SB  | Exit 5 on-ramp                      | 26.5                | С      |  |  |  |  |  |  |  |
| 35  | Exit 4 on-ramp                      | 27.9                | С      |  |  |  |  |  |  |  |
|   | Exit 2W off-ramp                    | 33.0                | D      |  |  |  |  |  |  |  |
|   | WEAVE AREAS                         |                     |        |  |  |  |  |  |  |  |
| NB  | Exit 2E on-ramp to Exit 2W off-ramp | 22.0                | С      |  |  |  |  |  |  |  |
| SB  | Exit 2W on-ramp to Exit 2E off-ramp | 28.5                | D      |  |  |  |  |  |  |  |

pc/mi/ln = passenger cars per mile per lane

| Exhibit 2.3.1.7 d Freeway Level of Service 2009 Existing PM Peak Hour |                                     |                                  |        |  |  |  |  |  |  |  |
|---|-------------------------------------|----------------------------------|--------|--|--|--|--|--|--|--|
|   |                                     | Existing                         | (2009) |  |  |  |  |  |  |  |
| Direction   | Segment/Junction                    | Density<br>pc/mi/ln <sup>1</sup> | LOS    |  |  |  |  |  |  |  |
|   | FREEWAY SEGMENTS                    |                                  |        |  |  |  |  |  |  |  |
|   | Exit 2W on to Exit 4 off            | 36.3                             | E      |  |  |  |  |  |  |  |
| NB  | Exit 4 off to Exit 4 on             | 31.5                             | D      |  |  |  |  |  |  |  |
| IND   | Exit 4 on to Exit 5 off             | **                               | F      |  |  |  |  |  |  |  |
|   | Exit 5 on to Exit 6 off             | 31.5                             | D      |  |  |  |  |  |  |  |
| SB  | Exit 6 on to Exit 5 off             | 16.2                             | В      |  |  |  |  |  |  |  |
|   | Exit 4 off to Exit 5 on             | 16.3                             | В      |  |  |  |  |  |  |  |
|   | Exit 5 on to Exit 4 on              | 17.6                             | В      |  |  |  |  |  |  |  |
|   | Exit 4 on to Exit 2W off            | 24.5                             | С      |  |  |  |  |  |  |  |
|   | RAMP JUNCTIONS                      | 3                                |        |  |  |  |  |  |  |  |
|   | Exit 2W on-ramp                     | 29.4                             | D      |  |  |  |  |  |  |  |
| NB  | Exit 4 off-ramp                     | 33.4                             | D      |  |  |  |  |  |  |  |
| NB  | Exit 4 on-ramp                      | 35.8                             | F      |  |  |  |  |  |  |  |
|   | Exit 5 off-ramp                     | 45.0                             | F      |  |  |  |  |  |  |  |
|   | Exit 4 off-ramp                     | 20.1                             | С      |  |  |  |  |  |  |  |
| SB  | Exit 5 on-ramp                      | 16.9                             | В      |  |  |  |  |  |  |  |
| 05  | Exit 4 on-ramp                      | 22.1                             | С      |  |  |  |  |  |  |  |
|   | Exit 2W off-ramp                    | 25.5                             | С      |  |  |  |  |  |  |  |
|   | WEAVE AREAS                         |                                  |        |  |  |  |  |  |  |  |
| NB  | Exit 2E on-ramp to Exit 2W off-ramp | 39.2                             | Е      |  |  |  |  |  |  |  |
| SB  | Exit 2W on-ramp to Exit 2E off-ramp | 29.4                             | D      |  |  |  |  |  |  |  |

<sup>1 -</sup> pc/mi/ln = passenger cars per mile per lane

\*\* - Density is greater than 45 pc/mi/ln and can no longer be calculated with the basic freeway analysis. Segment is oversaturated.

|                  | Exhibit F.10.1-1<br>Freeway Level of Service<br>No-Build<br>AM Peak Hour |                     |         |                     |     |                     |     |                     |     |  |  |  |  |
|------------------|--|---------------------|---------|---------------------|-----|---------------------|-----|---------------------|-----|--|--|--|--|
|                  | ETC (2016) ETC+10 (2026) ETC+20 (2036) ETC+30 (2046)                     |                     |         |                     |     |                     |     |                     |     |  |  |  |  |
| Direction        | Segment/Junction   | Density<br>pc/mi/ln | LOS     | Density<br>pc/mi/ln | LOS | Density<br>pc/mi/ln | LOS | Density<br>pc/mi/ln | LOS |  |  |  |  |
| FREEWAY SEGMENTS |  |                     |         |                     |     |                     |     |                     |     |  |  |  |  |
|                  | Exit 2W on to Exit 4 off   | 19.6                | С       | 19.6                | С   | 19.6                | С   | -                   | -   |  |  |  |  |
| NB               | Exit 4 off to Exit 4 on  | 14.7                | В       | 14.7                | В   | 14.4                | В   | 13.7                | В   |  |  |  |  |
| IND              | Exit 4 on to Exit 5 off  | 18.0                | В       | 18.0                | В   | 18.3                | С   | -                   | -   |  |  |  |  |
|                  | Exit 5 on to Exit 6 off  | 12.3                | В       | 12.5                | В   | 12.8                | В   | -                   | -   |  |  |  |  |
|                  | Exit 6 on to Exit 5 off  | 29.9                | D       | 29.6                | D   | 29.6                | D   | -                   | -   |  |  |  |  |
| SB               | Exit 4 off to Exit 5 on  | 28.8                | D       | 29.1                | D   | 29.7                | D   | -                   | -   |  |  |  |  |
| OB               | Exit 5 on to Exit 4 on   | 30.4                | D       | 31.0                | D   | 31.4                | D   | 31.4                | D   |  |  |  |  |
|                  | Exit 4 on to Exit 2W off   | 34.2                | D       | 34.6                | D   | 35.0                | D   | -                   | -   |  |  |  |  |
|                  |  |                     | RAMP JU | JNCTIONS            |     |                     |     |                     |     |  |  |  |  |
|                  | Exit 2W on-ramp  | 16.6                | В       | 16.7                | В   | 16.6                | В   | -                   | -   |  |  |  |  |
| NB               | Exit 4 off-ramp  | 22.0                | С       | 22.0                | С   | 22.1                | С   | -                   | -   |  |  |  |  |
| IND              | Exit 4 on-ramp   | 16.8                | В       | 16.7                | В   | 16.3                | В   | -                   | -   |  |  |  |  |
|                  | Exit 5 off-ramp  | 22.0                | С       | 21.9                | С   | 22.2                | С   | -                   | -   |  |  |  |  |
|                  | Exit 4 off-ramp  | 32.8                | D       | 32.8                | D   | 32.8                | D   | -                   | -   |  |  |  |  |
| SB               | Exit 5 on-ramp   | 25.5                | С       | 25.8                | С   | 26.5                | С   | -                   | -   |  |  |  |  |
| OB               | Exit 4 on-ramp   | 28.1                | D       | 28.5                | D   | 28.6                | D   | -                   | -   |  |  |  |  |
|                  | Exit 2W off-ramp   | 33.0                | D       | 33.2                | D   | 33.4                | D   | -                   | -   |  |  |  |  |
|                  |  |                     | WEAVE   | AREAS               |     |                     |     |                     |     |  |  |  |  |
| NB               | Exit 2E on-ramp to Exit 2W off-ramp                                      | 21.4                | С       | 21.6                | С   | 21.6                | С   | -                   | -   |  |  |  |  |
| SB               | Exit 2W on-ramp to Exit 2E off-ramp                                      | 31.1                | D       | 32.0                | D   | 32.8                | D   | -                   | -   |  |  |  |  |

pc/mi/ln = passenger cars per mile per lane

|                  |  |                                  | way Lev<br>No-I | F.10.1-2<br>/el of Ser<br>Build<br>ak Hour | vice |                  |     |                  |     |  |  |  |  |
|------------------|--|----------------------------------|-----------------|--|------|------------------|-----|------------------|-----|--|--|--|--|
|                  | ETC (2016) ETC+10 (2026) ETC+20 (2036) ETC+30 (2046) |                                  |                 |  |      |                  |     |                  |     |  |  |  |  |
| Direction        | Segment/Junction                                     | Density<br>pc/mi/ln <sup>1</sup> | LOS             | Density<br>pc/mi/ln                        | LOS  | Density pc/mi/ln | LOS | Density pc/mi/ln | LOS |  |  |  |  |
| FREEWAY SEGMENTS |  |                                  |                 |  |      |                  |     |                  |     |  |  |  |  |
|                  | Exit 2W on to Exit 4 off                             | 36.3                             | E               | 36.8                                       | E    | 37.3             | Е   | -                | -   |  |  |  |  |
| NB               | Exit 4 off to Exit 4 on                              | 31.5                             | D               | 31.5                                       | D    | 32.2             | D   | 31.8             | D   |  |  |  |  |
| IND              | Exit 4 on to Exit 5 off                              | **                               | F               | **   | F    | **               | F   | -                | -   |  |  |  |  |
|                  | Exit 5 on to Exit 6 off                              | 32.0                             | D               | 32.3                                       | D    | 32.8             | D   | -                | -   |  |  |  |  |
|                  | Exit 6 on to Exit 5 off                              | 16.9                             | В               | 17.9                                       | В    | 18.6             | С   | -                | -   |  |  |  |  |
| SB               | Exit 4 off to Exit 5 on                              | 16.7                             | В               | 17.0                                       | В    | 18.0             | В   | -                | -   |  |  |  |  |
| OD O             | Exit 5 on to Exit 4 on                               | 18.3                             | С               | 18.6                                       | С    | 19.3             | С   | 19.9             | С   |  |  |  |  |
|                  | Exit 4 on to Exit 2W off                             | 25.2                             | С               | 25.8                                       | С    | 26.8             | D   | -                | -   |  |  |  |  |
|                  |  |                                  | RAMP JU         | INCTIONS                                   |      |                  |     |                  |     |  |  |  |  |
|                  | Exit 2W on-ramp                                      | 29.6                             | D               | 29.6                                       | D    | 29.9             | D   | -                | -   |  |  |  |  |
| NB               | Exit 4 off-ramp                                      | 33.5                             | D               | 33.7                                       | D    | 33.9             | D   | -                | -   |  |  |  |  |
| ND               | Exit 4 on-ramp                                       | 36.7                             | F               | 37.0                                       | F    | 37.8             | F   | -                | -   |  |  |  |  |
|                  | Exit 5 off-ramp                                      | 46.6                             | F               | 47.3                                       | F    | 48.1             | F   | -                | -   |  |  |  |  |
|                  | Exit 4 off-ramp                                      | 19.3                             | В               | 20.4                                       | С    | 20.9             | С   | -                | -   |  |  |  |  |
| SB               | Exit 5 on-ramp                                       | 16.7                             | В               | 17.1                                       | В    | 18.0             | В   | -                | -   |  |  |  |  |
| OD OD            | Exit 4 on-ramp                                       | 22.7                             | С               | 23.5                                       | С    | 24.5             | С   | -                | -   |  |  |  |  |
|                  | Exit 2W off-ramp                                     | 26.2                             | С               | 26.8                                       | С    | 27.7             | С   | -                | -   |  |  |  |  |
|                  |  |                                  | WEAVE           | AREAS                                      |      |                  |     |                  |     |  |  |  |  |
| NB               | Exit 2E on-ramp to Exit 2W off-ramp                  | 39.1                             | Е               | 38.8                                       | Е    | 38.9             | Е   | -                | -   |  |  |  |  |
| SB               | Exit 2W on-ramp to Exit 2E off-ramp                  | 26.8                             | С               | 27.6                                       | С    | 28.6             | D   | -                | -   |  |  |  |  |

<sup>1 -</sup> pc/mi/ln = passenger cars per mile per lane

During the AM peak hour, all of the freeway segments, ramp junctions and weave areas are estimated to operate at LOS D or better through ETC+20. There are some locations where the analysis of future No-Build conditions shows a decrease in vehicle density from the Existing conditions. This is related to the projected regional changes in travel patterns and mode choice of CDTC's regional travel demand model, which indicate either no growth of mainline traffic combined with slight growth on the ramp or slight decreases in ramp volumes.

During the PM peak hour, the following locations operate at LOS E or worse under the Existing condition in the northbound direction:

- Freeway Segments
  - o Exit 2W on to Exit 4 off
  - Exit 4 on to Exit 5 off
- Ramp Junctions
  - Exit 4 on-ramp
  - Exit 5 off-ramp
- Weave Areas
  - o Exit 2E on to Exit 2W off

Through the ETC+20 design year, the same freeway facilities are estimated to continue to operate at LOS E or F. There is no substantial degradation in these operations beyond the Existing condition because there is little growth estimated in peak hour traffic on I-87. Similar to the AM peak hour, there are a few

<sup>\*\* -</sup> Density is greater than 45 pc/mi/ln and can no longer be calculated with the basic freeway analysis. Segment is oversaturated.

instances where the density reported decreases in a future year; these instances are related to slight decreases in ramp volumes from the regional demand model.

#### 10.2 Level of Service for Build Alternatives

Two build alternatives were evaluated for the purpose of this study: the Diamond Alternative and Flyover Alternative.

Summaries of the LOS for each build alternative for the ETC, ETC+10, ETC+20, and ETC+30 future year conditions are presented in the subsequent sections. Note that the ETC+30 condition was only evaluated for the intersections adjacent to the bridges.

#### 10.2.1 Diamond Alternative

#### 10.2.1.1 Intersection Level of Service

Summaries of the LOS for the future design years, for the Diamond Alternative, are presented in Exhibits F.10.2.1.1-1 through F.10.2.1.1-8. As shown in these analyses, there are intersections within the study area, but outside the project area, that continue to have movements that experience LOS E or worse at ETC+20 during the studied peak hours. These intersections are:

- Central Avenue & Wolf Road (PM)
- Sand Creek Road & Wolf Road (PM)
- Exit 5 SB Ramps & Watervliet-Shaker Road (PM)

At the project area intersections, all intersection approaches are estimated to operate at LOS D or better through ETC+20. There is one movement, the westbound left-turn at the Albany-Shaker Road & Connector Road intersection that operates at LOS E during both peak hours. This is relatively low volume movement and the LOS E is a result of signal timing priority given to the major through movements on Albany-Shaker Road and the Exit 4 ramps. Observation of other factors such as vehicle queue and volume-to-capacity ratio show that there is reserve capacity for the movement and the delay level is related to the cycle length used to serve the other major movements at the intersection.

The ETC+30 design year was also evaluated for the intersections adjacent to bridge structures that will be replaced as part of the project (I-87 over Albany-Shaker Road). All intersection approaches, at the intersections adjacent to the bridge structures, are estimated to operate at LOS D or better. The westbound left-turn at the Albany-Shaker Road & Connector Road intersection will continue to operate at LOS E during both beak hours.

## **VISSIM Analysis Results**

## Intersection Level of Service

## 2016 (ETC) Diamond Alternative AM

| Intersection/Appro     | oach          | Delay *     | LOS | Intersection/Approach     |               | Delay * | LOS |
|------------------------|---------------|-------------|-----|---------------------------|---------------|---------|-----|
| Central Avenue & Wolf  | Road          |             |     | Albany Shaker Road & (    | Old Wolf Roa  | ad      |     |
| Central Avenue         | EB LL         | 40.4        | D   | Albany Shaker Road        | EB L          | 22.1    | С   |
| Ceritial Avenue        | EB TT         | 19.9        | В   | Albany Shaker Road        | EB TT         | 10.3    | В   |
| Central Avenue         | WB TTT        | 37.9        | D   | Albany Shaker Road        | WB TT/R       | 15.6    | В   |
| Ceriliai Averide       | WB R          | 7.6         | Α   | Old Wolf Road             | SB LL         | 28.4    | С   |
| Exit 2 NB Off-Ramp     | NB TTT        | 40.2        | D   | Old Woll Road             | SB R          | 21.1    | С   |
| Wolf Road              | SB LL         | 43.7        | D   | OVERALL                   |               | 18.3    | В   |
| vvoii rtoad            | SB RR         | 6.1         | Α   | Exit 5 SB Ramps & Water   | ervliet Shake | er Road |     |
| OVERALL                |               | 28.3        | С   | Watervliet Shaker Road    | EB L/TT/R     | 25.8    | С   |
| Sand Creek Road & W    | olf Road      |             |     | Watervliet Shaker Road    | WB LT         | 20.8    | С   |
|                        | EB L          | 30.0        | С   | F 5 OD O# D               | SB L          | 27.7    | С   |
| Sand Creek Road        | EB T          | 26.2        | С   | Exit 5 SB Off-Ramp        | SB T/R        | 22.4    | С   |
|                        | EB R          | 2.6         | А   | Sherwood Drive            | SB L/T/R      | 31.7    | С   |
|                        | WB L          | 31.6        | С   | OVERALL                   |               | 23.7    | С   |
| Sand Creek Road        | WB T          | 28.6        | С   | Exit 5 NB Ramps & Wat     | ervliet Shake | er Road |     |
|                        | WB R          | 4.9         | Α   | Water Bat Ohalian Daad    | EB L          | 27.0    | С   |
| Wolf Road              | NB L          | 42.1        | D   | Watervliet Shaker Road    | EB T/R        | 13.7    | В   |
|                        | NB TT         | 14.6        | В   | Watervliet Shaker Road    | WB L          | 13.4    | В   |
|                        | NB R          | 8.3         | Α   |                           | WB TT/R       | 16.5    | В   |
|                        | SB L          | 42.7        | D   | Holly Lane                | NB L/T/R      | 38.3    | D   |
| Wolf Road              | SB TT         | 15.7        | В   | Exit 5 NB Off-Ramp        | SB L          | 26.6    | С   |
|                        | SB R          | 9.0         | Α   | LXII 5 NB OII-Rainp       | SB T/R        | 11.2    | В   |
| OVERALL                |               | 19.0        | В   | OVERALL                   |               | 17.6    | В   |
| Metro Park Drive/Airpo | ort Connector | & Wolf Road |     | Airport Connector & Alb   | oany Shaker   | Road    |     |
|                        | EB L          | 23.7        | С   | Albany Shaker Road        | EB TT         | 8.2     | Α   |
| Airport Connector      | EB T          | 17.0        | В   | Albany Ghaker Road        | EB RR         | 3.7     | Α   |
|                        | EB R          | 6.9         | Α   | Albany Shaker Road        | WB L          | 42.8    | D   |
| Metro Park Drive       | WB L          | 26.3        | С   | randariy Grandi reda      | WB TT         | 5.2     | Α   |
|                        | WB T/R        | 29.4        | С   | Airport Connector         | NB LL         | 34.9    | С   |
|                        | NB L          | 31.6        | С   |                           | NB R          | 5.4     | Α   |
| Wolf Road              | NB TT         | 13.9        | В   | OVERALL                   |               | 13.9    | В   |
|                        | NB R          | 6.8         | Α   | Diamond NB Ramps & A      | Airport Conn  | ector   |     |
|                        | SB L          | 16.3        | В   | Diamond NB Off-Ramp       | NB L          | 19.6    | В   |
| Wolf Road              | SB TT         | 19.8        | В   | Jamena 112 on 11amp       | NB R          | 11.0    | В   |
|                        | SB R          | 6.9         | Α   | Airport Connector         | WB T          | 16.8    | В   |
| OVERALL                |               | 17.7        | В   | Airport Connector         | EB L          | 15.4    | В   |
| Albany Shaker Road &   | Wolf Road     |             |     | Turport Commoder          | EB T          | 4.7     | Α   |
| Albany Shaker Road     | EB TT/R       | 2.8         | Α   | OVERALL                   |               | 13.0    | В   |
| ribariy Griaker Road   | EB R          | 4.1         | Α   | Diamond SB Ramps & A      | Airport Conn  | ector   |     |
| Albany Shaker Road     | WB L          | 10.1        | В   | Diamond SB Off-Ramp       | SB L          | 23.2    | С   |
| many onaner road       | WBTT          | 4.9         | Α   | Sidillolid OB Oll-Italilp | SB R          | 4.9     | Α   |
| Wolf Road              | NB L          | 31.3        | С   | Airport Connector         | WB L          | 12.0    | В   |
| IVOII NOAU             | NB R          | 8.7         | Α   | The office of the order   | WB T          | 6.8     | Α   |
| OVERALL                |               | 6.7         | Α   | Airport Connector         | EB T          | 14.7    | В   |
|                        |               |             |     | Airport Connector         | EB R          | 1.4     | А   |
|                        |               |             |     | OVERALL                   | 1             | 10.1    | В   |

<sup>\*</sup> Delay provided in seconds per vehicle.

 $L \! = \! Left, \ T \! = \! Through, \ R \! = \! Right, \ L/T \! = \! shared \ Left/Through, \ T/R \! = \! shared \ Through/Right$ 

## VISSIM Analysis Results

## Intersection Level of Service 2016 (ETC) Diamond Alternative PM

| Intersection/Approach  |              | Delay *     | LOS | Intersection/Approa      | ach           | Delay * | LOS |
|------------------------|--------------|-------------|-----|--------------------------|---------------|---------|-----|
| Central Avenue & Wolf  | Road         |             |     | Albany Shaker Road & 0   | Old Wolf Roa  | ıd      |     |
| Central Avenue         | EB LL        | 54.2        | D   | Albany Shakar Bood       | EB L          | 30.9    | С   |
| Ceritiai Averiue       | EB TT        | 19.2        | В   | Albany Shaker Road       | EB TT         | 11.6    | В   |
| Central Avenue         | WB TTT       | 37.2        | D   | Albany Shaker Road       | WB TT/R       | 15.4    | В   |
| Ceriliai Averiue       | WB R         | 19.7        | В   | Old Wolf Road            | SB LL         | 29.5    | С   |
| Exit 2 NB Off-Ramp     | NB TTT       | 52.6        | D   | Old Woll Road            | SB R          | 24.4    | С   |
| Wolf Road              | SB LL        | 62.0        | Е   | OVERALL                  |               | 19.4    | В   |
| Woll Road              | SB RR        | 26.0        | С   | Exit 5 SB Ramps & Water  | rvliet Shake  | r Road  |     |
| OVERALL                |              | 35.5        | D   | Watervliet Shaker Road   | EB L/TT/R     | 51.8    | D   |
| Sand Creek Road & W    | olf Road     |             |     | Watervliet Shaker Road   | WB LT         | 27.0    | С   |
|                        | EB L         | 108.3       | F   | 5 % 5 OD O% D            | SB L          | 37.6    | D   |
| Sand Creek Road        | EB T         | 92.0        | F   | Exit 5 SB Off-Ramp       | SB T/R        | 8.6     | Α   |
|                        | EB R         | 48.8        | D   | Sherwood Drive           | SB L/T/R      | 48.5    | D   |
|                        | WB L         | 161.0       | F   | OVERALL                  |               | 38.2    | D   |
| Sand Creek Road        | WB T         | 171.4       | F   | Exit 5 NB Ramps & Wate   | ervliet Shake | r Road  |     |
|                        | WB R         | 92.5        | F   |                          | EB L          | 26.7    | С   |
|                        | NB L         | 63.2        | Е   | Watervliet Shaker Road   | EB T/R        | 13.1    | В   |
| Wolf Road              | NB TT        | 33.3        | С   | Motor diet Chaker Bood   | WB L          | 18.5    | В   |
|                        | NB R         | 12.3        | В   | - Watervliet Shaker Road | WB TT/R       | 20.5    | С   |
|                        | SB L         | 62.3        | E   | Holly Lane               | NB L/T/R      | 35.3    | D   |
| Wolf Road              | SB TT        | 35.8        | D   | Fuit 5 ND Off Dama       | SB L          | 28.9    | С   |
|                        | SB R         | 18.4        | В   | Exit 5 NB Off-Ramp       | SB T/R        | 11.7    | В   |
| OVERALL                |              | 70.0        | E   | OVERALL                  |               | 20.6    | С   |
| Metro Park Drive/Airpo | rt Connector | & Wolf Road |     | Airport Connector & Alb  | any Shaker    | Road    |     |
|                        | EB L         | 30.0        | С   | Albany Chalcar Dood      | EB TT         | 23.5    | С   |
| Airport Connector      | ЕВ Т         | 30.5        | С   | Albany Shaker Road       | EB RR         | 7.5     | Α   |
|                        | EB R         | 18.2        | В   | Albany Shaker Road       | WB L          | 40.9    | D   |
| Metro Park Drive       | WB L         | 20.7        | С   | Albany Snaker Road       | WB TT         | 8.5     | Α   |
| wello Falk Dilve       | WB T/R       | 35.8        | D   | Airport Connector        | NB LL         | 31.4    | С   |
|                        | NB L         | 40.8        | D   | Airport Connector        | NB R          | 8.0     | Α   |
| Wolf Road              | NB TT        | 20.8        | С   | OVERALL                  |               | 19.1    | В   |
|                        | NB R         | 7.8         | А   | Diamond NB Ramps & A     | irport Conn   | ector   |     |
|                        | SB L         | 24.0        | С   | Diamond NP Off Pama      | NB L          | 18.9    | В   |
| Wolf Road              | SB TT        | 27.6        | С   | Diamond NB Off-Ramp      | NB R          | 6.8     | Α   |
|                        | SB R         | 12.0        | В   | Airport Connector        | WB T          | 41.3    | D   |
| OVERALL                |              | 24.8        | С   | Airport Consector        | EB L          | 14.9    | В   |
| Albany Shaker Road &   | Wolf Road    |             |     | Airport Connector        | EB T          | 15.1    | В   |
| Albania Chalini Dini   | EB TT/R      | 17.0        | В   | OVERALL                  |               | 20.1    | С   |
| Albany Shaker Road     | EB R         | 5.9         | Α   | Diamond SB Ramps & A     | irport Conn   | ector   |     |
| Albania Obal D         | WB L         | 18.6        | В   |                          | SB L          | 20.5    | С   |
| Albany Shaker Road     | WBTT         | 7.7         | А   | Diamond SB Off-Ramp      | SB R          | 11.6    | В   |
| W-14 D 1               | NB L         | 28.1        | С   | Airm and C               | WB L          | 10.4    | В   |
| Wolf Road              | NB R         | 8.7         | А   | Airport Connector        | WB T          | 25.7    | С   |
| OVERALL                |              | 13.1        | В   |                          | EB T          | 33.2    | С   |
|                        | <u> </u>     |             |     | Airport Connector        | EB R          | 7.1     | А   |
|                        |              |             |     | ii .                     |               |         | -   |

<sup>\*</sup> Delay provided in seconds per vehicle.

 $L \! = \! Left, \ T \! = \! Through, \ R \! = \! Right, \ L/T \! = \! shared \ Left/Through, \ T/R \! = \! shared \ Through/Right$ 

## **VISSIM Analysis Results**

### Intersection Level of Service

## 2026 (ETC+10) Diamond Alternative AM

| Intersection/Appro     | oach          | Delay *     | LOS | Intersection/Approach   |               | Delay * | LOS |
|------------------------|---------------|-------------|-----|-------------------------|---------------|---------|-----|
| Central Avenue & Wol   | f Road        |             |     | Albany Shaker Road & 0  | Old Wolf Roa  | ad      |     |
| Central Avenue         | EB LL         | 39.3        | D   | Albany Shaker Road      | EB L          | 23.5    | С   |
| Ceritiai Avenue        | EB TT         | 20.0        | В   | Albany Shaker Road      | EB TT         | 11.0    | В   |
| Control Avenue         | WB TTT        | 37.2        | D   | Albany Shaker Road      | WB TT/R       | 15.9    | В   |
| Central Avenue         | WB R          | 8.2         | Α   | Old Wolf Dood           | SB LL         | 28.9    | С   |
| Exit 2 NB Off-Ramp     | NB TTT        | 39.6        | D   | Old Wolf Road           | SB R          | 21.1    | С   |
| Wolf Road              | SB LL         | 45.1        | D   | OVERALL                 |               | 18.9    | В   |
| Woll Road              | SB RR         | 6.8         | А   | Exit 5 SB Ramps & Wate  | ervliet Shake | er Road |     |
| OVERALL                |               | 28.2        | С   | Watervliet Shaker Road  | EB L/TT/R     | 34.8    | С   |
| Sand Creek Road & W    | olf Road      |             |     | Watervliet Shaker Road  | WB LT         | 23.9    | С   |
|                        | EB L          | 32.3        | С   | - '' - OD O'' D         | SB L          | 30.8    | С   |
| Sand Creek Road        | EB T          | 28.1        | С   | Exit 5 SB Off-Ramp      | SB T/R        | 26.9    | С   |
|                        | EB R          | 2.5         | Α   | Sherwood Drive          | SB L/T/R      | 35.1    | D   |
|                        | WB L          | 33.5        | С   | OVERALL                 |               | 27.8    | С   |
| Sand Creek Road        | WB T          | 29.9        | С   | Exit 5 NB Ramps & Wate  | ervliet Shake | er Road |     |
|                        | WB R          | 5.0         | Α   |                         | EB L          | 30.4    | С   |
|                        | NB L          | 42.5        | D   | -Watervliet Shaker Road | EB T/R        | 14.3    | В   |
| Wolf Road              | NB TT         | 15.1        | В   | Watervliet Shaker Road  | WB L          | 16.1    | В   |
|                        | NB R          | 9.0         | Α   | Watervilet Shaker Road  | WB TT/R       | 16.2    | В   |
|                        | SB L          | 45.7        | D   | Holly Lane              | NB L/T/R      | 39.3    | D   |
| Wolf Road              | SB TT         | 17.0        | В   | Exit 5 NB Off-Ramp      | SB L          | 27.2    | С   |
|                        | SB R          | 9.3         | Α   | Exit 9 14B On Itamp     | SB T/R        | 12.2    | В   |
| OVERALL                |               | 20.2        | С   | OVERALL                 |               | 18.2    | В   |
| Metro Park Drive/Airpo | ort Connector | & Wolf Road |     | Airport Connector & Alb | any Shaker    | Road    |     |
|                        | EB L          | 25.6        | С   | Albany Shaker Road      | EB TT         | 9.2     | Α   |
| Airport Connector      | EB T          | 18.2        | В   | Albany Ghaker Road      | EB RR         | 3.7     | Α   |
|                        | EB R          | 6.8         | Α   | Albany Shaker Road      | WB L          | 42.4    | D   |
| Metro Park Drive       | WB L          | 21.4        | С   | rabarry charter reduc   | WB TT         | 5.5     | Α   |
| Wolfo'r alk Blivo      | WB T/R        | 28.5        | С   | Airport Connector       | NB LL         | 32.9    | С   |
|                        | NB L          | 32.0        | С   | ranport connector       | NB R          | 5.7     | Α   |
| Wolf Road              | NB TT         | 15.0        | В   | OVERALL                 |               | 14.4    | В   |
|                        | NB R          | 7.0         | Α   | Diamond NB Ramps & A    | Airport Conn  | ector   |     |
|                        | SB L          | 16.1        | В   | Diamond NB Off-Ramp     | NB L          | 19.3    | В   |
| Wolf Road              | SB TT         | 21.8        | С   | Sidmond NB Oil Rump     | NB R          | 10.8    | В   |
|                        | SB R          | 6.8         | Α   | Airport Connector       | WB T          | 22.9    | С   |
| OVERALL                |               | 18.7        | В   | Airport Connector       | EB L          | 15.9    | В   |
| Albany Shaker Road 8   | Wolf Road     |             |     | Amport Connector        | EB T          | 12.0    | В   |
| Albany Shaker Road     | EB TT/R       | 3.2         | Α   | OVERALL                 |               | 15.5    | В   |
| Albarry Shaker Road    | EB R          | 4.3         | Α   | Diamond SB Ramps & A    | irport Conn   | ector   |     |
| Albany Shaker Road     | WB L          | 11.4        | В   | Diamond SB Off-Ramp     | SB L          | 19.2    | В   |
| Tabally Gliaker Noad   | WBTT          | 4.9         | Α   | Diamond 35 On-Namp      | SB R          | 5.2     | Α   |
| Wolf Road              | NB L          | 29.8        | С   | Airport Connector       | WB L          | 12.0    | В   |
|                        | NB R          | 8.7         | Α   | aport connector         | WB T          | 14.7    | В   |
| OVERALL                |               | 6.9         | Α   | Airport Connector       | EB T          | 19.4    | В   |
|                        |               |             |     | Taport Connector        | EB R          | 1.5     | Α   |
|                        |               |             |     | OVERALL                 |               | 12.2    | В   |

<sup>\*</sup> Delay provided in seconds per vehicle.

## **VISSIM Analysis Results**

## Intersection Level of Service

## 2026 (ETC+10) Diamond Alternative PM

| Intersection/Appro     | oach          | Delay *     | LOS | Intersection/Approach   |               | Delay * | LOS |
|------------------------|---------------|-------------|-----|-------------------------|---------------|---------|-----|
| Central Avenue & Wolf  | Road          |             |     | Albany Shaker Road & (  | Old Wolf Roa  | nd      |     |
| Central Avenue         | EB LL         | 56.4        | E   | Albany Shaker Road      | EB L          | 34.0    | С   |
| Ceritral Avertue       | EB TT         | 20.0        | С   | Albany Shaker Road      | EB TT         | 15.3    | В   |
| Central Avenue         | WB TTT        | 39.6        | D   | Albany Shaker Road      | WB TT/R       | 17.2    | В   |
| Ceriliai Averiue       | WB R          | 21.2        | С   | Old Wolf Road           | SB LL         | 29.3    | С   |
| Exit 2 NB Off-Ramp     | NB TTT        | 53.5        | D   | Old Woll Road           | SB R          | 23.8    | С   |
| Wolf Road              | SB LL         | 62.4        | Е   | OVERALL                 |               | 21.0    | С   |
| Woll Road              | SB RR         | 27.7        | С   | Exit 5 SB Ramps & Wat   | ervliet Shake | r Road  |     |
| OVERALL                |               | 37.0        | D   | Watervliet Shaker Road  | EB L/TT/R     | 63.2    | E   |
| Sand Creek Road & W    | olf Road      |             |     | Watervliet Shaker Road  | WB LT         | 26.2    | С   |
|                        | EB L          | 116.6       | F   | - : - 00 0 0 0          | SB L          | 39.1    | D   |
| Sand Creek Road        | EB T          | 108.4       | F   | Exit 5 SB Off-Ramp      | SB T/R        | 9.1     | Α   |
|                        | EB R          | 61.5        | Е   | Sherwood Drive          | SB L/T/R      | 46.0    | D   |
|                        | WB L          | 169.2       | F   | OVERALL                 |               | 43.1    | D   |
| Sand Creek Road        | WB T          | 180.5       | F   | Exit 5 NB Ramps & Wat   | ervliet Shake | er Road |     |
|                        | WB R          | 99.9        | F   |                         | EB L          | 32.1    | С   |
|                        | NB L          | 66.9        | Е   | Watervliet Shaker Road  | EB T/R        | 10.1    | В   |
| Wolf Road              | NB TT         | 35.2        | D   | Watervliet Shaker Road  | WB L          | 19.3    | В   |
|                        | NB R          | 14.4        | В   |                         | WB TT/R       | 21.0    | С   |
|                        | SB L          | 64.4        | Е   | Holly Lane              | NB L/T/R      | 40.7    | D   |
| Wolf Road              | SB TT         | 38.3        | D   | Exit 5 NB Off-Ramp      | SB L          | 31.6    | С   |
|                        | SB R          | 20.6        | С   |                         | SB T/R        | 9.1     | Α   |
| OVERALL                |               | 74.9        | E   | OVERALL                 |               | 21.5    | С   |
| Metro Park Drive/Airpo | ort Connector | & Wolf Road |     | Airport Connector & Alk | any Shaker    | Road    |     |
|                        | EB L          | 32.1        | С   |                         | EB TT         | 23.2    | С   |
| Airport Connector      | EB T          | 31.4        | С   | Albany Shaker Road      | EB RR         | 7.4     | Α   |
|                        | EB R          | 19.3        | В   | Albany Shakar Bood      | WB L          | 47.2    | D   |
| Metro Park Drive       | WB L          | 22.0        | С   | Albany Shaker Road      | WB TT         | 6.6     | Α   |
| wello Park Drive       | WB T/R        | 36.5        | D   | Airport Connector       | NB LL         | 29.3    | С   |
|                        | NB L          | 43.7        | D   | All port Confidence     | NB R          | 6.0     | Α   |
| Wolf Road              | NB TT         | 23.8        | С   | OVERALL                 |               | 18.2    | В   |
|                        | NB R          | 8.7         | Α   | Diamond NB Ramps & A    | Airport Conn  | ector   |     |
|                        | SB L          | 16.5        | В   | Diamond NB Off-Ramp     | NB L          | 19.0    | В   |
| Wolf Road              | SB TT         | 30.0        | С   | Diamond NB On-Namp      | NB R          | 7.1     | Α   |
|                        | SB R          | 13.9        | В   | Airport Connector       | WB T          | 51.7    | D   |
| OVERALL                |               | 27.0        | С   | Airport Connector       | EB L          | 17.2    | В   |
| Albany Shaker Road &   | Wolf Road     |             |     | All port Confidence     | EB T          | 15.9    | В   |
| Albany Shakar Bood     | EB TT/R       | 18.1        | В   | OVERALL                 |               | 22.8    | С   |
| Albany Shaker Road     | EB R          | 6.5         | Α   | Diamond SB Ramps & A    | Airport Conn  | ector   |     |
| Albany Chaker Deed     | WB L          | 26.2        | С   | Diamond CD Off Days     | SB L          | 21.4    | С   |
| Albany Shaker Road     | WBTT          | 7.8         | Α   | Diamond SB Off-Ramp     | SB R          | 13.5    | В   |
| Not Dood               | NB L          | 26.4        | С   | Airmort Company         | WB L          | 11.0    | В   |
| Wolf Road              | NB R          | 9.1         | Α   | Airport Connector       | WB T          | 26.8    | С   |
| OVERALL                |               | 14.4        | В   | Airmont Course          | EB T          | 33.0    | С   |
|                        | -             | <u> </u>    |     | Airport Connector       | EB R          | 7.4     | А   |
|                        |               |             |     | I <del></del>           | 4             |         |     |

<sup>\*</sup> Delay provided in seconds per vehicle.

 $L \! = \! Left, \ T \! = \! Through, \ R \! = \! Right, \ L/T \! = \! shared \ Left/Through, \ T/R \! = \! shared \ Through/Right$ 

## **VISSIM Analysis Results**

### Intersection Level of Service

## 2036 (ETC+20) Diamond Alternative AM

| Intersection/Appro     | oach          | Delay *     | LOS | Intersection/Approach   |               | Delay * | LOS |
|------------------------|---------------|-------------|-----|-------------------------|---------------|---------|-----|
| Central Avenue & Wol   | f Road        |             |     | Albany Shaker Road & 0  | Old Wolf Roa  | nd      |     |
| Central Avenue         | EB LL         | 42.8        | D   | Albany Shaker Road      | EB L          | 23.8    | С   |
| Central Avenue         | EB TT         | 20.6        | С   | Albany Ghaker Road      | EB TT         | 11.1    | В   |
| Central Avenue         | WB TTT        | 36.5        | D   | Albany Shaker Road      | WB TT/R       | 16.9    | В   |
| Ceritial Averide       | WB R          | 8.8         | Α   | Old Wolf Road           | SB LL         | 28.6    | С   |
| Exit 2 NB Off-Ramp     | NB TTT        | 41.5        | D   | Old Woll Road           | SB R          | 21.2    | С   |
| Wolf Road              | SB LL         | 46.7        | D   | OVERALL                 |               | 19.2    | В   |
| Woll Road              | SB RR         | 7.0         | Α   | Exit 5 SB Ramps & Wate  | ervliet Shake | er Road |     |
| OVERALL                |               | 29.0        | С   | Watervliet Shaker Road  | EB L/TT/R     | 43.2    | D   |
| Sand Creek Road & W    | olf Road      |             |     | Watervliet Shaker Road  | WB LT         | 26.1    | С   |
|                        | EB L          | 32.1        | С   | F 5 OD O# D             | SB L          | 34.6    | С   |
| Sand Creek Road        | EB T          | 26.9        | С   | Exit 5 SB Off-Ramp      | SB T/R        | 32.8    | С   |
|                        | EB R          | 2.5         | Α   | Sherwood Drive          | SB L/T/R      | 35.6    | D   |
|                        | WB L          | 33.2        | С   | OVERALL                 |               | 31.8    | С   |
| Sand Creek Road        | WB T          | 30.3        | С   | Exit 5 NB Ramps & Water | ervliet Shake | er Road |     |
|                        | WB R          | 5.2         | А   |                         | EB L          | 30.9    | С   |
|                        | NB L          | 44.0        | D   | Watervliet Shaker Road  | EB T/R        | 15.2    | В   |
| Wolf Road              | NB TT         | 16.5        | В   | Materiliet Chaker Dood  | WB L          | 15.6    | В   |
|                        | NB R          | 7.4         | А   | Watervliet Shaker Road  | WB TT/R       | 17.1    | В   |
|                        | SB L          | 44.5        | D   | Holly Lane              | NB L/T/R      | 36.3    | D   |
| Wolf Road              | SB TT         | 18.2        | В   | 5 '4 5 ND O'4 D         | SB L          | 28.3    | С   |
|                        | SB R          | 9.6         | Α   | Exit 5 NB Off-Ramp      | SB T/R        | 12.3    | В   |
| OVERALL                |               | 21.1        | С   | OVERALL                 |               | 18.9    | В   |
| Metro Park Drive/Airpo | ort Connector | & Wolf Road |     | Airport Connector & Alb | any Shaker    | Road    |     |
|                        | EB L          | 25.5        | С   |                         | EB TT         | 10.6    | В   |
| Airport Connector      | EB T          | 24.3        | С   | Albany Shaker Road      | EB RR         | 3.7     | Α   |
|                        | EB R          | 6.9         | Α   | Albania Obalian Daad    | WB L          | 61.0    | Е   |
| M . D . D .            | WB L          | 21.9        | С   | Albany Shaker Road      | WB TT         | 6.5     | Α   |
| Metro Park Drive       | WB T/R        | 26.6        | С   | A :                     | NB LL         | 31.4    | С   |
|                        | NB L          | 33.8        | С   | Airport Connector       | NB R          | 6.4     | Α   |
| Wolf Road              | NB TT         | 15.4        | В   | OVERALL                 |               | 15.3    | В   |
|                        | NB R          | 7.7         | Α   | Diamond NB Ramps & A    | Airport Conn  | ector   |     |
|                        | SB L          | 13.1        | В   |                         | NB L          | 21.0    | С   |
| Wolf Road              | SB TT         | 21.6        | С   | Diamond NB Off-Ramp     | NB R          | 10.6    | В   |
|                        | SB R          | 6.9         | Α   | Airport Connector       | WB T          | 25.4    | С   |
| OVERALL                |               | 18.9        | В   |                         | EB L          | 22.6    | С   |
| Albany Shaker Road &   | Wolf Road     | <u> </u>    |     | Airport Connector       | EB T          | 18.2    | В   |
| <u> </u>               | EB TT/R       | 3.6         | А   | OVERALL                 |               | 18.9    | В   |
| Albany Shaker Road     | EB R          | 4.4         | A   | Diamond SB Ramps & A    | irport Conn   |         |     |
|                        | WBL           | 12.9        | В   |                         | SB L          | 20.7    | С   |
| Albany Shaker Road     | WBTT          | 5.4         | A   | Diamond SB Off-Ramp     | SB R          | 5.9     | A   |
|                        | NB L          | 29.8        | C   | 1                       | WB L          | 11.8    | В   |
| Wolf Road              | NB R          | 8.7         | A   | Airport Connector       | WB T          | 21.7    | С   |
| OVERALL                | 1.51          | 7.3         | A   | 1                       | EB T          | 25.1    | С   |
|                        |               |             |     | Airport Connector       | EB R          | 1.4     | A   |
|                        |               |             |     | I <del></del>           | LD IV         | 1.4     |     |

<sup>\*</sup> Delay provided in seconds per vehicle.

## Exhibit F.10.2.1.1-6 VISSIM Analysis Results

#### Intersection Level of Service

## 2036 (ETC+20) Diamond Alternative PM

| Intersection/Appro     | oach          | Delay *     | LOS | Intersection/Approach   |               | Delay * | LOS |
|------------------------|---------------|-------------|-----|-------------------------|---------------|---------|-----|
| Central Avenue & Wolf  | f Road        |             |     | Albany Shaker Road & 0  | Old Wolf Roa  | ad      |     |
| Central Avenue         | EB LL         | 56.9        | Е   | Albany Shaker Road      | EB L          | 46.3    | D   |
| Ceriliai Avenue        | EB TT         | 20.3        | С   | Albany Shaker Road      | EB TT         | 2.0     | Α   |
| Central Avenue         | WB TTT        | 41.4        | D   | Albany Shaker Road      | WB TT/R       | 10.2    | В   |
| Central Avenue         | WB R          | 25.7        | С   | Old Wolf Road           | SB LL         | 38.9    | D   |
| Exit 2 NB Off-Ramp     | NB TTT        | 54.9        | D   | Old Woll Road           | SB R          | 31.0    | С   |
| Wolf Road              | SB LL         | 60.3        | Е   | OVERALL                 |               | 18.2    | В   |
| Woll Road              | SB RR         | 27.4        | С   | Exit 5 SB Ramps & Wate  | ervliet Shake | er Road |     |
| OVERALL                |               | 38.0        | D   | Watervliet Shaker Road  | EB L/TT/R     | 69.4    | Е   |
| Sand Creek Road & W    | olf Road      |             |     | Watervliet Shaker Road  | WB LT         | 31.4    | С   |
|                        | EB L          | 133.6       | F   | E :: 5 OD O" D          | SB L          | 41.4    | D   |
| Sand Creek Road        | EB T          | 122.6       | F   | Exit 5 SB Off-Ramp      | SB T/R        | 11.0    | В   |
|                        | EB R          | 73.2        | Е   | Sherwood Drive          | SB L/T/R      | 52.0    | D   |
|                        | WB L          | 177.5       | F   | OVERALL                 |               | 47.7    | D   |
| Sand Creek Road        | WB T          | 190.7       | F   | Exit 5 NB Ramps & Wate  | ervliet Shake | er Road |     |
|                        | WB R          | 109.0       | F   | Watervliet Shaker Road  | EB L          | 31.6    | С   |
|                        | NB L          | 68.2        | Е   | Watervilet Shaker Road  | EB T/R        | 12.1    | В   |
| Wolf Road              | NB TT         | 36.1        | D   | Watervliet Shaker Road  | WB L          | 21.3    | С   |
|                        | NB R          | 15.8        | В   | Watervilet Shaker Road  | WB TT/R       | 20.8    | С   |
|                        | SB L          | 66.3        | Е   | Holly Lane              | NB L/T/R      | 39.3    | D   |
| Wolf Road              | SB TT         | 37.5        | D   | Exit 5 NB Off-Ramp      | SB L          | 33.3    | С   |
|                        | SB R          | 21.0        | С   | Exit 5 NB Oil-Railip    | SB T/R        | 11.0    | В   |
| OVERALL                |               | 79.1        | E   | OVERALL                 |               | 22.0    | С   |
| Metro Park Drive/Airpo | ort Connector | & Wolf Road |     | Airport Connector & Alb | any Shaker    | Road    |     |
|                        | EB L          | 36.2        | D   | Albany Chalcar Dags     | EB TT         | 28.6    | С   |
| Airport Connector      | EB T          | 30.8        | С   | Albany Shaker Road      | EB RR         | 7.8     | Α   |
|                        | EB R          | 19.9        | В   | Albany Shaker Road      | WB L          | 59.0    | E   |
| Metro Park Drive       | WB L          | 26.5        | С   | Albany Shaker Road      | WB TT         | 25.0    | С   |
| Wello'l alk Blive      | WB T/R        | 41.5        | D   | Airport Connector       | NB LL         | 34.8    | С   |
|                        | NB L          | 47.9        | D   | raiport connector       | NB R          | 9.7     | Α   |
| Wolf Road              | NB TT         | 23.6        | С   | OVERALL                 |               | 24.6    | С   |
|                        | NB R          | 9.2         | Α   | Diamond NB Ramps & A    | Airport Conn  | ector   |     |
|                        | SB L          | 20.7        | С   | Diamond NB Off-Ramp     | NB L          | 22.5    | С   |
| Wolf Road              | SB TT         | 31.9        | С   | Biamona NB On Ramp      | NB R          | 7.1     | Α   |
|                        | SB R          | 14.9        | В   | Airport Connector       | WB T          | 39.0    | D   |
| OVERALL                |               | 29.4        | С   | Airport Connector       | EB L          | 20.4    | С   |
| Albany Shaker Road &   | Wolf Road     |             |     | port connector          | ЕВ Т          | 14.5    | В   |
| Albany Shaker Road     | EB TT/R       | 19.6        | В   | OVERALL                 |               | 22.1    | С   |
| Albany Shaker Road     | EB R          | 8.2         | Α   | Diamond SB Ramps & A    | irport Conn   | ector   |     |
| Albany Shaker Road     | WB L          | 23.9        | С   | Diamond SB Off-Ramp     | SB L          | 26.0    | С   |
| Thousand Charles Road  | WBTT          | 7.0         | Α   | Siamona OB On-Itamp     | SB R          | 17.0    | В   |
| Wolf Road              | NB L          | 36.5        | D   | Airport Connector       | WB L          | 10.5    | В   |
| TTOII ITOUU            | NB R          | 11.9        | В   | , in port Connector     | WB T          | 24.6    | С   |
| OVERALL                |               | 16.3        | В   | Airport Connector       | EB T          | 32.6    | С   |
|                        |               | ·           |     | wiiport Comilector      | EB R          | 8.0     | А   |
|                        |               |             |     | OVERALL                 |               | 18.9    | В   |

<sup>\*</sup> Delay provided in seconds per vehicle.

## **VISSIM Analysis Results**

## **Intersection Level of Service**

## 2046 (ETC+30) Diamond Alternative AM

| Intersection/Appro                             | pach      | Delay * | LOS                  | Intersection/Appro                   | Delay *      | LOS   |   |
|--|-----------|---------|----------------------|--------------------------------------|--------------|-------|---|
| Metro Park Drive/Airport Connector & Wolf Road |           |         | Albany Shaker Road & | Old Wolf Roa                         | ıd           |       |   |
|  | EB L      | 24.9    | С                    | Albany Shaker Road                   | EB L         | 25.0  | С |
| Airport Connector                              | EB T      | 23.8    | С                    | Albany Shaker Road                   | EB TT        | 13.0  | В |
|  | EB R      | 6.8     | Α                    | Albany Shaker Road                   | WB TT/R      | 17.4  | В |
| Metro Park Drive                               | WB L      | 24.5    | С                    | Old Wolf Road                        | SB LL        | 29.3  | С |
| Wello I alk Dilve                              | WB T/R    | 25.9    | С                    | Old Woll Road                        | SB R         | 21.0  | С |
|  | NB L      | 33.4    | С                    | OVERALL                              |              | 20.1  | С |
| Wolf Road                                      | NB TT     | 14.2    | В                    | Airport Connector & All              | oany Shaker  | Road  |   |
|  | NB R      | 6.7     | Α                    | Albany Shaker Road                   | EB TT        | 10.9  | В |
|  | SB L      | 16.3    | В                    | Albany Shaker Road                   | EB RR        | 3.9   | Α |
| Wolf Road                                      | SB TT     | 22.0    | С                    | Albany Shaker Road                   | WB L         | 38.5  | D |
|  | SB R      | 6.8     | Α                    | Albaily Shaker Road                  | WB TT        | 6.8   | Α |
| OVERALL  |           | 18.7    | В                    | Airport Connector                    | NB LL        | 32.5  | С |
| Albany Shaker Road &                           | Wolf Road |         |                      | All port Confidence                  | NB R         | 6.5   | Α |
| Albanii Chalian Daad                           | EB TT/R   | 3.7     | Α                    | OVERALL                              |              | 15.6  | В |
| Albany Shaker Road                             | EB R      | 4.8     | А                    | Diamond NB Ramps & Airport Connector |              |       |   |
| Albany Chalcar Dood                            | WB L      | 13.1    | В                    | Diamond ND Off Domn                  | NB L         | 20.7  | С |
| Albany Shaker Road                             | WBTT      | 5.3     | А                    | Diamond NB Off-Ramp                  | NB R         | 11.2  | В |
| Wolf Road                                      | NB L      | 31.0    | С                    | Airport Connector                    | WB T         | 26.3  | С |
| Woll Road                                      | NB R      | 9.5     | Α                    | Airport Connector                    | EB L         | 19.3  | В |
| OVERALL  |           | 7.8     | Α                    | All port Connector                   | ЕВ Т         | 17.6  | В |
|  |           |         |                      | OVERALL                              |              | 18.4  | В |
|  |           |         |                      | Diamond SB Ramps &                   | Airport Conn | ector |   |
|  |           |         |                      | Diamond SD Off Borns                 | SB L         | 20.6  | С |
|  |           |         |                      | Diamond SB Off-Ramp                  | SB R         | 6.0   | Α |
|  |           |         |                      | Airport Connector                    | WB L         | 10.6  | В |
|  |           |         |                      | Airport Connector                    | WB T         | 21.7  | С |
|  |           |         |                      | Airport Connector                    | ЕВ Т         | 25.6  | С |
|  |           |         |                      | Airport Connector                    | EB R         | 1.5   | Α |
|  |           |         |                      | OVERALL                              |              | 15.7  | В |

<sup>\*</sup> Delay provided in seconds per vehicle.

### **VISSIM Analysis Results**

### **Intersection Level of Service**

### 2046 (ETC+30) Diamond Alternative PM

| Intersection/Appro      | ach          | Delay *     | LOS | Intersection/Appro                 | ach          | Delay * | LOS |  |  |  |
|-------------------------|--------------|-------------|-----|------------------------------------|--------------|---------|-----|--|--|--|
| Metro Park Drive/Airpor | rt Connector | & Wolf Road |     | Albany Shaker Road & Old Wolf Road |              |         |     |  |  |  |
|                         | EB L         | 36.5        | D   | Albany Shaker Road                 | EB L         | 48.1    | D   |  |  |  |
| Airport Connector       | EB T         | 30.9        | С   | Albany Shaker Road                 | EB TT        | 1.9     | А   |  |  |  |
|                         | EB R         | 20.0        | С   | Albany Shaker Road                 | WB TT/R      | 10.7    | В   |  |  |  |
| Metro Park Drive        | WB L         | 26.6        | С   | Old Wolf Road                      | SB LL        | 38.8    | D   |  |  |  |
| ivietio i aik blive     | WB T/R       | 42.5        | D   | Old Woll Road                      | SB R         | 29.6    | С   |  |  |  |
|                         | NB L         | 46.3        | D   | OVERALL                            |              | 18.4    | В   |  |  |  |
| Wolf Road               | NB TT        | 24.6        | С   | Airport Connector & Alt            | any Shaker   | Road    |     |  |  |  |
|                         | NB R         | 9.5         | Α   | Albany Shaker Road                 | EB TT        | 29.7    | С   |  |  |  |
|                         | SB L         | 22.7        | С   | Albany Shaker Road                 | EB RR        | 8.6     | А   |  |  |  |
| Wolf Road               | SB TT        | 32.0        | С   | Albany Shaker Road                 | WB L         | 59.4    | E   |  |  |  |
| SB R 15.9 B             |              |             |     | Albany Shaker Road                 | WB TT        | 24.6    | С   |  |  |  |
| OVERALL 29.6 C          |              |             |     | Airport Connector                  | NB LL        | 34.8    | С   |  |  |  |
| Albany Shaker Road &    | Wolf Road    |             |     | All port Connector                 | NB R         | 7.0     | Α   |  |  |  |
| Albany Chakar Bood      | EB TT/R      | 19.4        | В   | OVERALL                            |              | 24.8    | С   |  |  |  |
| Albany Shaker Road      | EB R         | 8.6         | А   | Diamond NB Ramps & A               | Airport Conn | ector   |     |  |  |  |
| Albany Chakar Dood      | WB L         | 23.3        | С   | Diamond ND Off Domn                | NB L         | 22.8    | С   |  |  |  |
| Albany Shaker Road      | WBTT         | 7.4         | Α   | Diamond NB Off-Ramp                | NB R         | 7.5     | А   |  |  |  |
| Wolf Road               | NB L         | 35.0        | D   | Airport Connector                  | WBT          | 42.4    | D   |  |  |  |
| Woll Road               | NB R         | 12.2        | В   | Airport Connector                  | EB L         | 23.5    | С   |  |  |  |
| OVERALL                 |              | 16.2        | В   | All port Connector                 | EB T         | 14.7    | В   |  |  |  |
|                         |              |             |     | OVERALL                            |              | 23.1    | С   |  |  |  |
|                         |              |             |     | Diamond SB Ramps & A               | Airport Conn | ector   |     |  |  |  |
|                         |              |             |     | Diamond CD Off Darra               | SB L         | 28.3    | С   |  |  |  |
|                         |              |             |     | Diamond SB Off-Ramp                | SB R         | 18.3    | В   |  |  |  |
|                         |              |             |     | Airport Connector                  | WB L         | 11.5    | В   |  |  |  |
|                         |              |             |     | Airport Connector                  | WB T         | 25.2    | С   |  |  |  |
|                         |              |             |     | Airport Consector                  | ЕВ Т         | 33.1    | С   |  |  |  |
|                         |              |             |     | Airport Connector                  | EB R         | 9.6     | Α   |  |  |  |
|                         |              |             |     | OVERALL                            |              | 20.1    | С   |  |  |  |

<sup>\*</sup> Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

#### 10.2.1.2 Freeway Level of Service

Freeway analyses for I-87 were conducted in accordance with the Highway Capacity Manual (HCM2000) using HCS+. The analyses were conducted for the freeway segments between Exits 2 and 4, Exits 4 and 5, Exits 5 and 6, and on the segment under the proposed Connector Road and Diamond interchange. Ramp junctions were evaluated at Exits 2, 4 and 5. Weave areas were evaluated at Exit 2. All of these analyses were conducted for Existing, ETC, ETC+10 and ETC+20. The freeway segment under the proposed Connector Road and Diamond interchange was also evaluated for ETC+30.

The results of the AM and PM peak hour Flyover Alternative freeway analyses are summarized in Exhibits F.10.2.1.2-1 and F.10.2.1.2-2.

|  | Exhibit F.10.2.1.2-1 Freeway Level of Service Diamond Alternative AM Peak Hour |                     |        |                     |     |                     |     |                     |     |  |  |  |  |
|--|--|---------------------|--------|---------------------|-----|---------------------|-----|---------------------|-----|--|--|--|--|
| ETC (2016) ETC+10 (2026) ETC+20 (2036) ETC+30 (2046) |  |                     |        |                     |     |                     |     |                     |     |  |  |  |  |
| Direction  | Segment/Junction   | Density<br>pc/mi/ln | LOS    | Density<br>pc/mi/ln | LOS | Density<br>pc/mi/ln | LOS | Density<br>pc/mi/ln | LOS |  |  |  |  |
|  |  | F                   | REEWAY | SEGMENT             | S   |                     |     |                     |     |  |  |  |  |
| Exit 2W on to Exit 4 off 21.6 C 22.9 C 23.9 C        |  |                     |        |                     |     |                     |     |                     |     |  |  |  |  |
| NB   | Exit 4 off to Exit 4 on  | 16.0                | В      | 16.7                | В   | 16.7                | В   | 17.0                | В   |  |  |  |  |
| IND  | Exit 4 on to Exit 5 off  | 16.3                | В      | 17.0                | В   | 17.3                | В   | 17.3                | В   |  |  |  |  |
|  | Exit 5 on to Exit 6 off  | 11.8                | В      | 12.5                | В   | 12.5                | В   | -                   | -   |  |  |  |  |
|  | Exit 6 on to Exit 5 off 29.9 D 30.4 D 30.9 D                                   |                     |        |                     |     |                     |     |                     |     |  |  |  |  |
| SB   | Exit 5 on to Exit 4 off  | 35.4                | Е      | 37.7                | Е   | 40.4                | Е   | 40.4                | Е   |  |  |  |  |
| 00   | Exit 4 off to Exit 4 on  | 30.7                | D      | 32.0                | D   | 33.4                | D   | 33.1                | D   |  |  |  |  |
|  | Exit 4 on to Exit 2W off   | 34.2                | D      | 34.6                | D   | 35.0                | D   | -                   | -   |  |  |  |  |
|  |  |                     | RAMP J | UNCTIONS            |     |                     |     |                     |     |  |  |  |  |
|  | Exit 2W on-ramp  | 18.1                | В      | 19.2                | В   | 20.1                | С   | -                   | -   |  |  |  |  |
| NB   | Exit 4 off-ramp  | 20.9                | С      | 22.2                | С   | 23.3                | С   | -                   | -   |  |  |  |  |
| IND  | Exit 4 on-ramp   | 14.7                | В      | 15.3                | В   | 15.5                | В   | -                   | -   |  |  |  |  |
|  | Exit 5 off-ramp  | 19.2                | В      | 19.8                | В   | 20.1                | С   | -                   | -   |  |  |  |  |
|  | Exit 5 on-ramp   | 26.1                | С      | 27.6                | С   | 29.2                | D   | -                   | -   |  |  |  |  |
| SB   | Exit 4 off-ramp  | 29.8                | D      | 31.0                | D   | 32.1                | D   | -                   | -   |  |  |  |  |
| 35   | Exit 4 on-ramp   | 26.1                | С      | 27.2                | С   | 28.2                | D   | -                   | -   |  |  |  |  |
|  | Exit 2W off-ramp   | 33.3                | D      | 33.6                | D   | 33.8                | D   | -                   | -   |  |  |  |  |
| WEAVE AREAS  |  |                     |        |                     |     |                     |     |                     |     |  |  |  |  |
| NB   | Exit 2E on-ramp to Exit 2W off-ramp  | 22.2                | С      | 23.6                | С   | 24.8                | С   | -                   | -   |  |  |  |  |
| SB   | Exit 2W on-ramp to Exit 2E off-ramp  | 29.8                | D      | 30.3                | D   | 31.0                | D   | -                   | -   |  |  |  |  |

|  | Exhibit F.10.2.1.2-2 Freeway Level of Service Diamond Alternative PM Peak Hour |                     |        |                  |     |                  |     |                     |     |  |  |  |  |
|--|--|---------------------|--------|------------------|-----|------------------|-----|---------------------|-----|--|--|--|--|
| ETC (2016) ETC+10 (2026) ETC+20 (2036) ETC+30 (2046) |  |                     |        |                  |     |                  |     |                     |     |  |  |  |  |
| Direction  | Segment/Junction   | Density<br>pc/mi/ln | LOS    | Density pc/mi/ln | LOS | Density pc/mi/ln | LOS | Density<br>pc/mi/ln | LOS |  |  |  |  |
|  |  | F                   | REEWAY | SEGMENT          | S   |                  |     |                     |     |  |  |  |  |
| Exit 2W on to Exit 4 off 39.5 E 40.2 E 40.8 E        |  |                     |        |                  |     |                  |     |                     |     |  |  |  |  |
| NB   | Exit 4 off to Exit 4 on  | 31.1                | D      | 31.1             | D   | 31.5             | D   | 31.5                | D   |  |  |  |  |
| IND  | Exit 4 on to Exit 5 off  | 43.0                | Е      | 43.7             | Е   | 44.6             | Е   | **                  | F   |  |  |  |  |
|  | Exit 5 on to Exit 6 off  | 30.1                | D      | 30.9             | D   | 31.7             | D   | -                   | -   |  |  |  |  |
|  | Exit 6 on to Exit 5 off 17.2 B 17.8 B 18.4 C                                   |                     |        |                  |     |                  |     |                     |     |  |  |  |  |
| SB   | Exit 5 on to Exit 4 off  | 23.9                | С      | 24.8             | С   | 25.5             | С   | 25.5                | С   |  |  |  |  |
| 00   | Exit 4 off to Exit 4 on  | 17.6                | В      | 18.0             | В   | 18.3             | С   | 18.0                | В   |  |  |  |  |
|  | Exit 4 on to Exit 2W off   | 25.2                | С      | 25.8             | С   | 26.5             | D   | -                   | -   |  |  |  |  |
|  |  |                     | RAMP J | UNCTIONS         |     |                  |     |                     |     |  |  |  |  |
|  | Exit 2W on-ramp  | 31.1                | D      | 31.2             | D   | 31.4             | D   | -                   | -   |  |  |  |  |
| NB   | Exit 4 off-ramp  | 32.4                | D      | 32.7             | D   | 32.9             | D   | -                   | -   |  |  |  |  |
| IND  | Exit 4 on-ramp   | 29.7                | D      | 30.1             | D   | 30.8             | D   | -                   | -   |  |  |  |  |
|  | Exit 5 off-ramp  | 36.4                | Е      | 36.6             | Е   | 36.9             | Е   | -                   | -   |  |  |  |  |
|  | Exit 5 on-ramp   | 18.4                | В      | 19.6             | В   | 20.1             | С   | -                   | -   |  |  |  |  |
| SB   | Exit 4 off-ramp  | 22.6                | С      | 23.5             | С   | 24.2             | С   | -                   | -   |  |  |  |  |
| 35   | Exit 4 on-ramp   | 21.8                | С      | 22.3             | С   | 22.8             | С   | -                   | -   |  |  |  |  |
|  | Exit 2W off-ramp 26.3 C 26.8 C 27.3 C  |                     |        |                  |     |                  |     |                     |     |  |  |  |  |
| WEAVE AREAS  |  |                     |        |                  |     |                  |     |                     |     |  |  |  |  |
| NB   | Exit 2E on-ramp to Exit 2W off-ramp  | 39.4                | Е      | 40.1             | E   | 41.2             | Е   | -                   | -   |  |  |  |  |
| SB   | Exit 2W on-ramp to Exit 2E off-ramp  | 23.9                | С      | 24.9             | С   | 25.8             | С   | -                   | -   |  |  |  |  |

During the AM peak hour, the following locations operate at LOS E under the ETC+20 condition in the southbound direction:

- Freeway Segments
  - o Exit 5 on to Exit 4 off

During the PM peak hour, the following locations operate at LOS E under the ETC+20 condition in the northbound direction:

- Freeway Segments
  - o Exit 2W on TO Exit 4 off
  - o Exit 4 on to Exit 5 off
- Ramp Junctions
  - Exit 5 off
- Weave Areas
  - o Exit 2E on to Exit 2W off

The southbound freeway segment between Exit 5 on and Exit 4 off is estimated to degrade from LOS D to LOS E during the AM peak hour when compared to No-Build ETC+20. The operations were approaching the LOS E threshold under the No-Build conditions and higher volume for the Diamond Alternative pushed it over the LOS E threshold (>35 pc/m/l). The new ramp configuration and removal of the C-D Road is the primary reason for the increase in traffic volume between Exits 5 and 4.

#### 10.2.2 Flyover Alternative

#### 10.2.2.1 Intersection Level of Service

Summaries of the LOS for the future design years for the Flyover Alternative are presented in Exhibits F.10.2.2.1-1 through F.10.2.2.1-8. As shown in these analyses, there are intersections within the study area, but outside the project area, that continue to have movements that experience LOS E or worse at ETC+20 during the studied peak hours:

- Central Avenue & Wolf Road (PM)
- Sand Creek Road & Wolf Road (PM)
- Exit 5 SB Ramps & Watervliet-Shaker Road (PM)

At the project area intersections, all intersection approaches are estimated to operate at LOS D or better through ETC+20. There is one movement, the westbound left-turn at the Albany-Shaker Road & New Exit 4 Ramps intersection, which operates at LOS E during both peak hours. This is a relatively low volume movement and the LOS E is a result of signal timing priority given to the major through movements on Albany-Shaker Road and the Exit 4 ramps. Observation of other factors such as vehicle queue and volume-to-capacity ratio show that there is reserve capacity for the movement and the delay level is related to the cycle length used to serve the other major movements at the intersection.

The ETC+30 design year was also evaluated for the intersections adjacent to bridge structures that will be replaced as part of the project (I-87 over Albany-Shaker Road). This evaluation was completed to confirm that additional geometry resulting in wider bridge width is not needed to support the ETC+30 design year.

# Exhibit F.10.2.2.1-1 **VISSIM Analysis Results** Intersection Level of Service

2016 (ETC) Flyover Alternative AM

| Signa                 | alized Inter |          | ,   | Signalized Intersections |               |           |         |  |  |  |
|-----------------------|--------------|----------|-----|--------------------------|---------------|-----------|---------|--|--|--|
| Intersection/Appro    | oach         | Delay *  | LOS | Intersection/Approx      | ach           | Delay *   | LOS     |  |  |  |
| Central Avenue & Wolf | Road         |          |     | Albany Shaker Road & 0   | Old Wolf Roa  | d         |         |  |  |  |
| Central Avenue        | EB LL        | 42.1     | D   | Albany Shaker Road       | EB L          | 18.2      | В       |  |  |  |
|                       | EB TT        | 19.7     | В   | r iibarry Crianor r toda | EB TT         | 15.6      | В       |  |  |  |
| Central Avenue        | WB TTT       | 38.4     | D   | Albany Shaker Road       | WB TT/R       | 13.5      | В       |  |  |  |
|                       | WB R         | 8.5      | Α   | Old Wolf Road            | SB LL         | 29.4      | С       |  |  |  |
| Exit 2 NB Off-Ramp    | NB TTT       | 42.5     | D   |                          | SB R          | 21.7      | С       |  |  |  |
| Wolf Road             | SB LL        | 47.8     | D   | OVERALL                  |               | 18.0      | В       |  |  |  |
| 77011 77044           | SB RR        | 5.4      | Α   | Exit 5 SB Ramps & Wate   | ervliet Shake | r Road    |         |  |  |  |
| OVERALL               |              | 29.2     | С   | Watervliet Shaker Road   | EB L/TT/R     | 17.1      | В       |  |  |  |
| Sand Creek Road & We  | olf Road     |          |     | Watervliet Shaker Road   | WB LT         | 24.5      | С       |  |  |  |
|                       | EB L         | 29.9     | С   | Evit 5 CB Off Bomp       | SB L          | 22.7      | С       |  |  |  |
| Sand Creek Road       | EB T         | 25.6     | С   | Exit 5 SB Off-Ramp       | SB T/R        | 24.3      | С       |  |  |  |
|                       | EB R         | 2.3      | Α   | Sherwood Drive           | SB L/T/R      | 26.4      | С       |  |  |  |
|                       | WB L         | 35.2     | D   | OVERALL                  | OVERALL       |           | С       |  |  |  |
| Sand Creek Road       | WB T         | 31.8     | С   | Exit 5 NB Ramps & Water  | ervliet Shake | r Road    |         |  |  |  |
|                       | WB R         | 5.2      | А   | •                        | FBI           |           | С       |  |  |  |
|                       | NB L         | 39.5     | D   | Watervliet Shaker Road   | EB T/R        | 10.0      | Α       |  |  |  |
| Wolf Road             | NB TT        | 14.2     | В   |                          | WB L          | 9.9       | Α       |  |  |  |
|                       | NB R         | 5.7      | A   | Watervliet Shaker Road   | WB TT/R       | 10.6      | В       |  |  |  |
|                       | SB L         | 43.1     | D   | Holly Lane               | NB L/T/R      | 28.2      | С       |  |  |  |
| Wolf Road             | SB TT        | 16.4     |     | В                        | SB L          | 21.4      | С       |  |  |  |
|                       | SB R         | 6.3      | A   | Exit 5 NB Off-Ramp       | SB T/R        | 9.3       | A       |  |  |  |
| OVERALL               |              | 19.0     | В   | OVERALL                  |               | 12.3      | В       |  |  |  |
| Metro Park Drive & Wo | olf Road     | <u> </u> |     | New Exit 4 Ramps & Alb   | any Shaker    | Road      |         |  |  |  |
| Hess Station          | EB L/T/R     | 36.7     | D   | ·                        | EB TT         | 18.6      | В       |  |  |  |
|                       | WB L         | 45.6     | D   | Albany Shaker Road       | EB R          | 6.0       | Α       |  |  |  |
| Metro Park Drive      | WB T/R       | 8.7      | A   |                          | WBL           | 41.4      | D       |  |  |  |
|                       | NB L         | 4.4      | A   | Albany Shaker Road       | WB TT         | 6.6       | A       |  |  |  |
| Wolf Road             | NB TT        | 2.5      | A   |                          | NB LL         | 22.7      | С       |  |  |  |
| <del>-</del>          | NB R         | 4.1      | A   | New Exit 4 Ramps         | NB R          | 11.0      | В       |  |  |  |
|                       | SB L         | 3.3      | A   | OVERALL                  | , vo i        | 15.2      | В       |  |  |  |
| Wolf Road             | SB TT/R      | 1.5      | A   |                          | alized Inte   |           | <u></u> |  |  |  |
| 0)/50411              | 36 I I/K     | -        |     | Ulisigii                 | anzeu mie     | 13ections |         |  |  |  |
| OVERALL               |              | 3.5      | Α   | Intersection/Appro       | ach           | Delay *   | LOS     |  |  |  |
| Albany Shaker Road &  |              | I        | _   |                          |               |           |         |  |  |  |
|                       | EB LL        | 51.1     | D   | Exit 4 NB Off-Ramp & W   | 1             | <u> </u>  |         |  |  |  |
| Albany Shaker Road    | EB TT/R      | 7.0      | А   | Exit 4 NB Off-Ramp       | EB R          | 14.8      | В       |  |  |  |
|                       | EB R         | 5.9      | Α   | 4                        |               |           |         |  |  |  |
|                       | WB L         | 20.0     | В   | 4                        |               |           |         |  |  |  |
| Albany Shaker Road    | WBTT         | 10.8     | В   | _                        |               |           |         |  |  |  |
|                       | WB R         | 5.0      | Α   | 1                        |               |           |         |  |  |  |
|                       | NB L         | 28.0     | С   | 1                        |               |           |         |  |  |  |
| Wolf Road             | NB L/TT      | 26.7     | С   | _                        |               |           |         |  |  |  |
|                       | NB R         | 2.1      | А   | _                        |               |           |         |  |  |  |
| OVERALL               |              | 12.9     | В   |                          |               |           |         |  |  |  |

<sup>\*</sup> Delay provided in seconds per vehicle.

### Exhibit F.10.2.2.1-2 VISSIM Analysis Results Intersection Level of Service

## 2016 (ETC) Flyover Alternative PM

| Sign                  | alized Inter |                        |       | Signa                                 | lized Inters  | sections       |     |  |
|-----------------------|--------------|------------------------|-------|---------------------------------------|---------------|----------------|-----|--|
| Intersection/Appro    | oach         | Delay *                | LOS   | Intersection/Approa                   | ach           | Delay *        | LOS |  |
| Central Avenue & Wol  | f Road       |                        |       | Albany Shaker Road & C                | Old Wolf Roa  | d              |     |  |
| Central Avenue        | EB LL        | 58.0                   | Е     | Albany Shaker Road                    | EB L          | 20.8           | С   |  |
| Certifal Averlue      | EB TT        | 19.8                   | В     | Albany Shaker Road                    | EB TT         | 17.7           | В   |  |
| Central Avenue        | WB TTT       | 54.4                   | D     | Albany Shaker Road                    | WB TT/R       | 9.2            | Α   |  |
| Ceritial Avenue       | WB R         | 29.2                   | С     | Old Wolf Road                         | SB LL         | 31.7           | С   |  |
| Exit 2 NB Off-Ramp    | NB TTT       | 54.8                   | D     | Old Woll Road                         | SB R          | 17.8           | В   |  |
| W-K DI                | SB LL        | 62.8                   | Е     | OVERALL                               |               | 18.9           | В   |  |
| Wolf Road             | SB RR        | 30.1                   | С     | Exit 5 SB Ramps & Wate                | ervliet Shake | r Road         |     |  |
| OVERALL               |              | 43.4                   | D     | Watervliet Shaker Road                | EB L/TT/R     | 42.6           | D   |  |
| Sand Creek Road & W   | olf Road     | <u> </u>               |       | Watervliet Shaker Road                | WB LT         | 23.9           | С   |  |
| oana orook koaa a ri  | EB L         | 128.3                  | F     | Watervillet Charlet Read              | SB L          | 36.2           | D   |  |
| Sand Creek Road       | EB T         | 107.7                  | '<br> | Exit 5 SB Off-Ramp                    | SB T/R        | 6.2            | A   |  |
|                       | EB R         | 61.3                   | E     | Sherwood Drive                        | SB L/T/R      | 45.6           | D A |  |
|                       | WB L         | 154.1                  | F     | OVERALL                               | 3D L/1/K      | 33.0           | C   |  |
| Cand Crook Bood       |              | -                      |       |                                       | 1             |                |     |  |
| Sand Creek Road       | WB T         | 169.3                  | F     | Exit 5 NB Ramps & Watervliet Shake    |               | r Road<br>31.4 |     |  |
|                       | WB R         | 86.0                   | F     | Watervliet Shaker Road                |               |                | С   |  |
|                       | NB L         | 67.3                   | E     |                                       | EB T/R        | 12.5           | В   |  |
| Wolf Road             | NB TT        | Watervliet Shaker Road |       | WB L                                  | 18.9          | В              |     |  |
|                       | NB R         | 14.3                   | В     |                                       | WB TT/R       | 21.0           | С   |  |
|                       | SB L         | 66.2                   | Е     | Holly Lane                            | NB L/T/R      | 32.2           | С   |  |
| Wolf Road             | SB TT        | 38.0                   | D     | Exit 5 NB Off-Ramp                    | SB L          | 34.1           | С   |  |
|                       | SB R         | 22.2                   | С     | Exit o NB on Ramp                     | SB T/R        | 10.2           | В   |  |
| OVERALL               |              | 71.1                   | E     | OVERALL                               |               | 23.2           | С   |  |
| Metro Park Drive & Wo | olf Road     |                        |       | New Exit 4 Ramps & Albany Shaker Road |               |                |     |  |
| Hess Station          | EB L/T/R     | 36.3                   | D     | Albany Chakar Daad                    | EB TT         | 26.8           | С   |  |
| Mater David Daire     | WB L         | 45.1                   | D     | - Albany Shaker Road                  | EB R          | 9.5            | А   |  |
| Metro Park Drive      | WB T/R       | 22.0                   | С     | A.II. O. I. D. I.                     | WB L          | 64.3           | E   |  |
|                       | NB L         | 7.3                    | Α     | Albany Shaker Road                    | WB TT         | 10.9           | В   |  |
| Wolf Road             | NB TT        | 6.4                    | А     |                                       | NB LL         | 22.8           | С   |  |
|                       | NB R         | 5.5                    | А     | New Exit 4 Ramps                      | NB R          | 8.9            | А   |  |
|                       | SB L         | 8.1                    | Α     | OVERALL                               | 1             | 18.5           | В   |  |
| Wolf Road             | SB TT/R      | 4.0                    | A     |                                       | alized Inte   |                |     |  |
| OVERALL               | OD 11/10     | 8.4                    | A     | Chaigh                                |               |                |     |  |
| Albany Shaker Road &  | Wolf Poad    | 0.4                    |       | Intersection/Approa                   | ach           | Delay *        | LOS |  |
| Tabany Onaker Road 6  | I            | E4 0                   |       | Evit 4 NB Off Bown 9 144              | olf Bood      |                |     |  |
| Albany Shaker Road    | EB LL        | 51.3                   | D     | Exit 4 NB Off-Ramp & W                |               |                | ^   |  |
| nibally Shakel Road   | EB TT/R      | 10.0                   | В .   | Exit 4 NB Off-Ramp                    | EB R          | 5.7            | A   |  |
|                       | EB R         | 5.5                    | A     | 4                                     |               |                |     |  |
|                       | WB L         | 25.0                   | С     | 4                                     |               |                |     |  |
| Albany Shaker Road    | WBTT         | 19.5                   | В     | 4                                     |               |                |     |  |
|                       | WB R         | 15.4                   | В     | -                                     |               |                |     |  |
|                       | NB L         | 23.4                   | С     | 4                                     |               |                |     |  |
| Wolf Road             | NB L/TT      | 26.5                   | С     | _                                     |               |                |     |  |
|                       | NB R         | 3.6                    | Α     | _                                     |               |                |     |  |
| OVERALL               |              | 19.5                   | В     |                                       |               |                |     |  |

<sup>\*</sup> Delay provided in seconds per vehicle.

### **VISSIM Analysis Results**

### Intersection Level of Service

### 2026 (ETC+10) Flyover Alternative AM

| Signa                 | Signalized Intersections |          |       |                                    | Signalized Intersections          |            |     |  |  |  |
|-----------------------|--------------------------|----------|-------|------------------------------------|-----------------------------------|------------|-----|--|--|--|
| Intersection/Appro    | oach                     | Delay *  | LOS   | Intersection/Approa                | nch                               | Delay *    | LOS |  |  |  |
| Central Avenue & Wolf | Road                     |          |       | Albany Shaker Road & C             | Old Wolf Roa                      | d          |     |  |  |  |
| Central Avenue        | EB LL                    | 44.6     | D     | Albany Shaker Road                 | EB L                              | 18.3       | В   |  |  |  |
|                       | EB TT                    | 21.1     | С     | ,                                  | EB TT                             | 15.5       | В   |  |  |  |
| Central Avenue        | WB TTT                   | 40.2     | D     | Albany Shaker Road                 | WB TT/R                           | 13.7       | В   |  |  |  |
|                       | WB R                     | 9.2      | Α     | Old Wolf Road                      | SB LL                             | 28.6       | С   |  |  |  |
| Exit 2 NB Off-Ramp    | NB TTT                   | 43.7     | D     |                                    | SB R                              | 21.9       | С   |  |  |  |
| Wolf Road             | SB LL                    | 50.0     | D     | OVERALL                            |                                   | 17.8       | В   |  |  |  |
|                       | SB RR                    | 6.5      | Α     | Exit 5 SB Ramps & Water            | ervliet Shake                     | r Road     |     |  |  |  |
| OVERALL               |                          | 31.2     | С     | Watervliet Shaker Road             | EB L/TT/R                         | 17.7       | В   |  |  |  |
| Sand Creek Road & W   | olf Road                 |          |       | Watervliet Shaker Road             | WB LT                             | 21.6       | С   |  |  |  |
|                       | EB L                     | 33.7     | С     | Evit E CD Off Down                 | SB L                              | 24.6       | С   |  |  |  |
| Sand Creek Road       | EB T                     | 27.9     | С     | Exit 5 SB Off-Ramp                 | SB T/R                            | 18.3       | В   |  |  |  |
|                       | EB R                     | 2.5      | А     | Sherwood Drive                     | SB L/T/R                          | 28.2       | С   |  |  |  |
|                       | WB L                     | 35.6     | D     | OVERALL                            | VERALL                            |            | С   |  |  |  |
| Sand Creek Road       | WB T                     | 32.5     | С     | Exit 5 NB Ramps & Wate             | xit 5 NB Ramps & Watervliet Shake |            |     |  |  |  |
|                       | WB R                     | 5.5      | Α     |                                    | FRI                               |            | С   |  |  |  |
|                       | NB L                     | 43.4     | D     | Watervliet Shaker Road EB T/R      |                                   | 10.4       | В   |  |  |  |
| Wolf Road             | NB TT                    | 14.5     | В     |                                    | WB L                              | 11.7       | В   |  |  |  |
|                       | NB R                     | 7.0      | A     | - Watervliet Shaker Road           | WB TT/R                           | 12.8       | В   |  |  |  |
|                       | SB L                     | 44.8     | D     | Holly Lane                         | NB L/T/R                          | 32.1       | С   |  |  |  |
| Wolf Road             | SB TT                    | 18.3     | В     |                                    | SB L                              | 24.1       | С   |  |  |  |
|                       | SB R                     | 7.0      | A     | Exit 5 NB Off-Ramp                 | SB T/R                            | 10.1       | В   |  |  |  |
| OVERALL               |                          | 20.3     | С     | OVERALL                            |                                   | 14.2       | В   |  |  |  |
| Metro Park Drive & Wo | If Road                  | <u> </u> |       | New Exit 4 Ramps & Albany Shaker R |                                   | Road       |     |  |  |  |
| Hess Station          | EB L/T/R                 | 37.8     | D     |                                    | EB TT                             | 23.1       | С   |  |  |  |
| 11000 01411011        | WB L                     | 51.4     | D     | Albany Shaker Road                 | EB R                              | 11.8       | В   |  |  |  |
| Metro Park Drive      | WB T/R                   | 8.6      | A     |                                    | WB L                              | 50.0       | D   |  |  |  |
|                       | NB L                     | 3.0      | A     | Albany Shaker Road                 | WB TT                             | 7.4        | A   |  |  |  |
| Wolf Road             | NB TT                    | 2.3      | A     | 1                                  | NB LL                             | 20.6       | C   |  |  |  |
|                       | NB R                     | 4.2      | A     | New Exit 4 Ramps                   | NB R                              | 11.8       | В   |  |  |  |
|                       | SB L                     | 3.1      | A     | OVERALL                            | , vo i                            | 17.0       | В   |  |  |  |
| Wolf Road             | SB TT/R                  |          |       |                                    | alized Inte                       |            |     |  |  |  |
| OVEDALL               | OD II/K                  | 1.6      | A .   | Unsign                             | anzeu mile                        | 1360110113 |     |  |  |  |
| OVERALL               |                          | 3.5      | Α     | Intersection/Approa                | ach                               | Delay *    | LOS |  |  |  |
| Albany Shaker Road &  |                          |          | _     |                                    |                                   |            |     |  |  |  |
|                       | EB LL                    | 48.4     | D     | Exit 4 NB Off-Ramp & W             | T                                 | Г          |     |  |  |  |
| Albany Shaker Road    | EB TT/R                  | 6.9      | А     | Exit 4 NB Off-Ramp                 | EB R                              | 20.3       | С   |  |  |  |
|                       | EB R                     | 7.0      | Α     | _                                  |                                   |            |     |  |  |  |
|                       | WB L                     | 22.6     | С     | 4                                  |                                   |            |     |  |  |  |
| Albany Shaker Road    | WBTT                     | 12.2     | В     | _                                  |                                   |            |     |  |  |  |
|                       | WB R                     | 5.2      | Α     | 1                                  |                                   |            |     |  |  |  |
|                       | NB L                     | 27.9     | С     | 1                                  |                                   |            |     |  |  |  |
| Wolf Road             | NB L/TT                  | 27.2     | 7.2 C |                                    |                                   |            |     |  |  |  |
|                       | NB R                     | 2.3      | Α     | _                                  |                                   |            |     |  |  |  |
| OVERALL               |                          | 13.2     | В     |                                    |                                   |            |     |  |  |  |

<sup>\*</sup> Delay provided in seconds per vehicle.

### **VISSIM Analysis Results**

### Intersection Level of Service

### 2026 (ETC+10) Flyover Alternative PM

| Signa                 | Signalized Intersections |              |        |                           | Signalized Intersections    |           |     |  |  |  |
|-----------------------|--------------------------|--------------|--------|---------------------------|-----------------------------|-----------|-----|--|--|--|
| Intersection/Appro    | ach                      | Delay *      | LOS    | Intersection/Approa       | ach                         | Delay *   | LOS |  |  |  |
| Central Avenue & Wolf | Road                     |              |        | Albany Shaker Road & C    | Old Wolf Roa                | d         |     |  |  |  |
| Central Avenue        | EB LL                    | 57.7         | Е      | Albany Shaker Road        | EB L                        | 22.4      | С   |  |  |  |
| Ochtrai / (Vehae      | EB TT                    | 19.8         | В      | Vilbarry Griaker Road     | EB TT                       | 17.6      | В   |  |  |  |
| Central Avenue        | WB TTT                   | 56.4         | Е      | Albany Shaker Road        | WB TT/R                     | 10.8      | В   |  |  |  |
| oomiai 7 (vondo       | WB R                     | 31.5         | С      | Old Wolf Road             | SB LL                       | 35.5      | D   |  |  |  |
| Exit 2 NB Off-Ramp    | NB TTT                   | 55.3         | Е      | 0.4 770 71044             | SB R                        | 19.9      | В   |  |  |  |
| Wolf Road             | SB LL                    | 65.1         | Е      | OVERALL                   |                             | 20.1      | С   |  |  |  |
| TYON TROUG            | SB RR                    | 33.1         | С      | Exit 5 SB Ramps & Water   | ervliet Shake               | r Road    |     |  |  |  |
| OVERALL               |                          | 44.7         | D      | Watervliet Shaker Road    | EB L/TT/R                   | 50.5      | D   |  |  |  |
| Sand Creek Road & Wo  | olf Road                 |              |        | Watervliet Shaker Road    | WB LT                       | 27.3      | С   |  |  |  |
|                       | EB L                     | 137.4        | F      | Evit F CR Off Romp        | SB L                        | 38.1      | D   |  |  |  |
| Sand Creek Road       | EB T                     | 121.1        | F      | Exit 5 SB Off-Ramp SB T/R |                             | 7.2       | Α   |  |  |  |
|                       | EB R                     | 72.0         | Е      | Sherwood Drive            | vood Drive SB L/T/R         |           | D   |  |  |  |
|                       | WB L                     | 170.5        | F      | OVERALL                   |                             | 37.8      | D   |  |  |  |
| Sand Creek Road       | WB T                     | 186.6        | F      | Exit 5 NB Ramps & Wate    | ervliet Shake               | r Road    |     |  |  |  |
|                       | WB R                     | 102.9        | F      | Water diet Obales Daard   | FRI                         |           | С   |  |  |  |
|                       | NB L                     | 66.7         | E      | - Waterviiet Shaker Road  | tervliet Shaker Road EB T/R |           | В   |  |  |  |
| Wolf Road             | NB TT                    | 36.3         | D      | Materialist Chalcar Dood  | WB L                        | 18.2      | В   |  |  |  |
|                       | NB R                     | 14.6         | В      | Watervliet Shaker Road    | WB TT/R                     | 23.1      | С   |  |  |  |
|                       | SB L                     | 73.9         | E      | Holly Lane                | NB L/T/R                    | 50.8      | D   |  |  |  |
| Wolf Road             | SB TT                    | 42.4         | D      | ,                         | SB L                        | 35.7      | D   |  |  |  |
|                       | SB R                     | 28.6         | С      | Exit 5 NB Off-Ramp        | SB T/R                      | 12.4      | В   |  |  |  |
| OVERALL               |                          | 77.1         | Е      | OVERALL                   |                             | 25.0      | С   |  |  |  |
| Metro Park Drive & Wo | If Road                  |              |        | New Exit 4 Ramps & Alb    | any Shaker I                | Road      |     |  |  |  |
| Hess Station          | EB L/T/R                 | 38.7         | D      | Alle and Objective Desert | EB TT                       | 30.8      | С   |  |  |  |
| Matera Davida Deixa   | WB L                     | 46.0         | D      | Albany Shaker Road        | EB R                        | 10.1      | В   |  |  |  |
| Metro Park Drive      | WB T/R                   | 23.4         | С      | Alle and Objective Desert | WB L                        | 68.3      | Е   |  |  |  |
|                       | NB L                     | 10.8         | В      | Albany Shaker Road        | WB TT                       | 9.9       | Α   |  |  |  |
| Wolf Road             | NB TT                    | 7.5          | Α      | Navy Foit 4 Bassas        | NB LL                       | 23.8      | С   |  |  |  |
|                       | NB R                     | 5.7          | Α      | New Exit 4 Ramps          | NB R                        | 9.7       | Α   |  |  |  |
| W 16 D                | SB L                     | 8.3          | Α      | OVERALL                   |                             | 19.7      | В   |  |  |  |
| Wolf Road             | SB TT/R                  | 4.1          | А      | Unsign                    | alized Inte                 | rsections |     |  |  |  |
| OVERALL               |                          | 9.2          | Α      |                           |                             |           |     |  |  |  |
| Albany Shaker Road &  | Wolf Road                |              |        | Intersection/Approa       | nch                         | Delay *   | LOS |  |  |  |
| ,                     | EB LL                    | 61.8         | E      | Exit 4 NB Off-Ramp & W    | olf Road                    |           |     |  |  |  |
| Albany Shaker Road    | EB TT/R                  | 10.1         | В      | Exit 4 NB Off-Ramp        | EB R                        | 6.0       | A   |  |  |  |
| Chance House          |                          |              |        | Exit 4 ND Oll-Italiip     | LUN                         | 0.0       |     |  |  |  |
|                       | EB R                     | 5.5          | A<br>C | -                         |                             |           |     |  |  |  |
| Albany Shaker Road    | WB L<br>WB T T           | 27.1<br>21.8 | С      | 1                         |                             |           |     |  |  |  |
| and the troad         | WB R                     | 20.0         | В      | -                         |                             |           |     |  |  |  |
|                       |                          |              | С      | -                         |                             |           |     |  |  |  |
| Wolf Road             | NB L<br>NB L/TT          | 24.4<br>29.8 | C      | -                         |                             |           |     |  |  |  |
|                       | NB R                     | 3.6          |        | 1                         |                             |           |     |  |  |  |
|                       |                          |              |        |                           |                             |           |     |  |  |  |

<sup>\*</sup> Delay provided in seconds per vehicle.

### **VISSIM Analysis Results**

#### Intersection Level of Service

2036 (ETC+20) Flyover Alternative AM

| Sign                  | alized Inter |   | C+20) 1 1y | Signalized Intersections |               |         |     |  |  |
|-----------------------|--------------|---|------------|--------------------------|---------------|---------|-----|--|--|
| Intersection/Appro    | oach         | Delay *                                   | LOS        | Intersection/Approa      | ach           | Delay * | LOS |  |  |
| Central Avenue & Wol  | f Road       |   |            | Albany Shaker Road & 0   | Old Wolf Roa  | d       |     |  |  |
| Central Avenue        | EB LL        | 46.4                                      | D          | Albany Shaker Road       | EB L          | 16.8    | В   |  |  |
| oomiai 7 wondo        | EB TT        | 23.1                                      | С          | Tibally Charlet Road     | EB TT         | 7.4     | Α   |  |  |
| Central Avenue        | WB TTT       | 41.7                                      | D          | Albany Shaker Road       | WB TT/R       | 12.8    | В   |  |  |
| Commun 7 (Vondo       | WB R         | 9.2                                       | Α          | Old Wolf Road            | SB LL         | 31.6    | С   |  |  |
| Exit 2 NB Off-Ramp    | NB TTT       | 46.2                                      | D          | 0.0                      | SB R          | 24.5    | С   |  |  |
| Wolf Road             | SB LL        | 53.3                                      | D          | OVERALL                  |               | 14.1    | В   |  |  |
|                       | SB RR        | 7.5                                       | Α          | Exit 5 SB Ramps & Water  | ervliet Shake | r Road  |     |  |  |
| OVERALL               |              | 33.6                                      | С          | Watervliet Shaker Road   | EB L/TT/R     | 22.6    | С   |  |  |
| Sand Creek Road & W   | olf Road     |   |            | Watervliet Shaker Road   | WB LT         | 21.7    | С   |  |  |
|                       | EB L         | 34.9                                      | С          | Evit 5 CD Off Bomp       | SB L          | 28.3    | С   |  |  |
| Sand Creek Road       | ЕВ Т         | 29.6                                      | С          | Exit 5 SB Off-Ramp       | SB T/R        | 17.2    | В   |  |  |
|                       | EB R         | 2.8                                       | А          | Sherwood Drive           | SB L/T/R      | 26.5    | С   |  |  |
|                       | WB L         | 35.2                                      | D          | D OVERALL                |               | 22.5    | С   |  |  |
| Sand Creek Road       | WB T         | 34.0 C Exit 5 NB Ramps & Watervliet Shake |            | r Road                   |               |         |     |  |  |
|                       | WB R         | 5.5                                       | Α          |                          | FRI           |         | С   |  |  |
|                       | NB L         | 45.2                                      | D          | Watervliet Shaker Road   | EB T/R        | 10.4    | В   |  |  |
| Wolf Road             | NB TT        | 16.6                                      | В          |                          | WB L          | 10.9    | В   |  |  |
|                       | NB R         | 6.6                                       | A          | Watervliet Shaker Road   | WB TT/R       | 15.8    | В   |  |  |
|                       | SB L         | 47.0                                      | D          | Holly Lane               | NB L/T/R      | 32.8    | С   |  |  |
| Wolf Road             | SB TT        | 19.7 B                                    | SB L       | 27.8                     | С             |         |     |  |  |
|                       | SB R         | 7.4                                       | A          | Exit 5 NB Off-Ramp       | SB T/R        | 11.5    | В   |  |  |
| OVERALL               |              | 21.8                                      | С          | OVERALL                  |               | 16.7    | В   |  |  |
| Metro Park Drive & Wo | olf Road     |   |            | New Exit 4 Ramps & Alb   | any Shaker I  | Road    |     |  |  |
| Hess Station          | EB L/T/R     | 40.9                                      | D          |                          | EB TT         | 27.3    | С   |  |  |
| . 1000 C.a.io.i       | WB L         | 48.7                                      | D          | Albany Shaker Road       | EB R          | 11.9    | В   |  |  |
| Metro Park Drive      | WB T/R       | 9.0                                       | A          |                          | WB L          | 61.9    | E   |  |  |
|                       | NB L         | 4.7                                       | Α          | Albany Shaker Road       | WB TT         | 11.3    | В   |  |  |
| Wolf Road             | NB TT        | 2.7                                       | A          |                          | NB LL         | 21.7    | С   |  |  |
|                       | NB R         | 4.5                                       | A          | New Exit 4 Ramps         | NB R          | 15.8    | В   |  |  |
|                       | SB L         | 4.0                                       | A          | OVERALL                  |               | 20.0    | С   |  |  |
| Wolf Road             | SB TT/R      | 1.7                                       | A          |                          | alized Inte   |         |     |  |  |
| OVERALL               | OD 11/K      |   |            | Onsign                   | anzea mile    | 1       |     |  |  |
|                       | Walf Dags    | 3.7                                       | A          | Intersection/Approa      | ach           | Delay * | LOS |  |  |
| Albany Shaker Road &  | 1            | I   |            | 5 % 4 ND 6% 5            |               |         |     |  |  |
| Albany Chalini Din    | EB LL        | 33.7                                      | C          | Exit 4 NB Off-Ramp & W   |               | 22.5    |     |  |  |
| Albany Shaker Road    | EB TT/R      | 9.0                                       | Α          | Exit 4 NB Off-Ramp       | EB R          | 28.2    | D   |  |  |
|                       | EB R         | 7.1                                       | A          | 4                        |               |         |     |  |  |
|                       | WB L         | 23.8                                      | С          | 4                        |               |         |     |  |  |
| Albany Shaker Road    | WBTT         | 11.4                                      | В          | 4                        |               |         |     |  |  |
|                       | WB R         | 5.2                                       | Α          | 4                        |               |         |     |  |  |
|                       | NB L         | 32.3                                      | С          | 1                        |               |         |     |  |  |
| Wolf Road             | NB L/TT      | 30.7                                      | С          | 1                        |               |         |     |  |  |
|                       | NB R         | 2.4                                       | Α          | _                        |               |         |     |  |  |
| OVERALL               |              | 13.5                                      | В          |                          |               |         |     |  |  |

<sup>\*</sup> Delay provided in seconds per vehicle.

### Exhibit F.10.2.2.1-6 VISSIM Analysis Results

# Intersection Level of Service

### 2036 (ETC+20) Flyover Alternative PM

| Signa                  | Signalized Intersections                                  |         |        |                          | Signalized Intersections |           |     |  |  |  |
|------------------------|---|---------|--------|--------------------------|--------------------------|-----------|-----|--|--|--|
| Intersection/Appro     | ach   | Delay * | LOS    | Intersection/Approa      | ach                      | Delay *   | LOS |  |  |  |
| Central Avenue & Wolf  | Road  |         |        | Albany Shaker Road & C   | Old Wolf Roa             | d         |     |  |  |  |
| Central Avenue         | EB LL   | 59.0    | E      | Albany Shaker Road       | EB L                     | 23.6      | С   |  |  |  |
|                        | EB TT   | 21.3    | С      | iliani, chaner rieda     | EB TT                    | 9.1       | Α   |  |  |  |
| Central Avenue         | WB TTT  | 58.9    | E      | Albany Shaker Road       | WB TT/R                  | 8.4       | Α   |  |  |  |
|                        | WB R  | 33.3    | С      | Old Wolf Road            | SB LL                    | 52.6      | D   |  |  |  |
| Exit 2 NB Off-Ramp     | NB TTT  | 58.3    | E      |                          | SB R                     | 26.6      | С   |  |  |  |
| Wolf Road              | SB LL   | 67.5    | E      | OVERALL                  |                          | 19.1      | В   |  |  |  |
|                        | SB RR   | 36.3    | D      | Exit 5 SB Ramps & Wate   | ervliet Shake            | r Road    |     |  |  |  |
| OVERALL                |   | 46.9    | D      | Watervliet Shaker Road   | EB L/TT/R                | 64.2      | Е   |  |  |  |
| Sand Creek Road & Wo   | If Road   |         |        | Watervliet Shaker Road   | WB LT                    | 29.3      | С   |  |  |  |
|                        | EB L  | 142.2   | F      | Exit 5 SB Off-Ramp       | SB L                     | 40.2      | D   |  |  |  |
| Sand Creek Road        | ЕВ Т  | 130.9   | F      | LXII 3 3B OII-Namp       | SB T/R                   | 8.7       | А   |  |  |  |
|                        | EB R  | 81.3    | F      | Sherwood Drive           | SB L/T/R                 | 49.1      | D   |  |  |  |
|                        | WB L  | 189.1   | F      | OVERALL                  |                          | 43.6      | D   |  |  |  |
| Sand Creek Road        | reek Road WB T 206.9 F Exit 5 NB Ramps & Watervliet Shake |         | r Road |                          |                          |           |     |  |  |  |
|                        | WB R 118.5 F FB I   |         | EB L   | 34.7                     | С                        |           |     |  |  |  |
|                        | NB L  | 70.0    | E      | Watervliet Shaker Road   | EB T/R                   | 12.2      | В   |  |  |  |
| Wolf Road              | NB TT   | 37.8    | D      | Materialist Chalcar Dood | WB L                     | 18.3      | В   |  |  |  |
|                        | NB R  | 15.9    | В      | Watervliet Shaker Road   | WB TT/R                  | 23.6      | С   |  |  |  |
|                        | SB L  |         |        | NB L/T/R                 | 45.4                     | D         |     |  |  |  |
| Wolf Road              | SB TT   | 50.5    | D      | Evit 5 ND O# Dawn        | SB L                     | 36.0      | D   |  |  |  |
|                        | SB R  | 37.1    | D      | Exit 5 NB Off-Ramp       | SB T/R                   | 14.2      | В   |  |  |  |
| OVERALL                |   | 83.1    | F      | OVERALL                  |                          | 25.0      | С   |  |  |  |
| Metro Park Drive & Wol | f Road  |         |        | New Exit 4 Ramps & Alb   | any Shaker I             | Road      |     |  |  |  |
| Hess Station           | EB L/T/R  | 37.1    | D      | Alle and Ohadaan Daad    | EB TT                    | 36.4      | D   |  |  |  |
|                        | WB L  | 45.1    | D      | Albany Shaker Road       | EB R                     | 10.6      | В   |  |  |  |
| Metro Park Drive       | WB T/R  | 19.8    | В      |                          | WB L                     | 73.1      | Е   |  |  |  |
|                        | NB L  | 9.2     | Α      | Albany Shaker Road       | WB TT                    | 13.5      | В   |  |  |  |
| Wolf Road              | NB TT   | 7.5     | Α      |                          | NB LL                    | 27.0      | С   |  |  |  |
|                        | NB R  | 5.8     | Α      | New Exit 4 Ramps         | NB R                     | 14.0      | В   |  |  |  |
|                        | SB L  | 10.0    | Α      | OVERALL                  |                          | 22.7      | С   |  |  |  |
| Wolf Road              | SB TT/R   | 4.0     | Α      | Unsign                   | alized Inte              | rsections |     |  |  |  |
| OVERALL                |   | 9.1     | Α      |                          |                          |           |     |  |  |  |
| Albany Shaker Road &   | Wolf Road   |         |        | Intersection/Approa      | nch                      | Delay *   | LOS |  |  |  |
| ,                      | EB LL   | 52.0    | D      | Exit 4 NB Off-Ramp & W   | olf Road                 |           |     |  |  |  |
| Albany Shaker Road     | EB TT/R   | 12.1    | В      | Exit 4 NB Off-Ramp       | EB R                     | 6.0       | A   |  |  |  |
|                        |   |         |        | Exit 4 ND On-Italiip     | LUN                      | 0.0       | /1  |  |  |  |
|                        | EB R<br>WB L  | 6.1     | A<br>C | 1                        |                          |           |     |  |  |  |
| Albany Shaker Road     |   | 25.6    | C      | 1                        |                          |           |     |  |  |  |
| wally chart invau      | WBTT  | 20.7    |        | 1                        |                          |           |     |  |  |  |
|                        | WB R  | 17.6    | В      | 1                        |                          |           |     |  |  |  |
| Wolf Road              | NB L  | 33.9    | C      | 1                        |                          |           |     |  |  |  |
| vvon Noau              | NB L/TT   | 46.0    | D      | 1                        |                          |           |     |  |  |  |
| OVERALI                | NB R  | 3.7     | A C    | 1                        |                          |           |     |  |  |  |
| OVERALL                | ı   | 24.2    | С      |                          |                          |           |     |  |  |  |

<sup>\*</sup> Delay provided in seconds per vehicle.

### **VISSIM Analysis Results**

### **Intersection Level of Service**

## 2046 (ETC+30) Flyover Alternative AM

| Sign                 | alized Inter | sections |     | Sign                                  | alized Inter | sections    |     |  |  |  |
|----------------------|--------------|----------|-----|---------------------------------------|--------------|-------------|-----|--|--|--|
| Intersection/Appro   | oach         | Delay *  | LOS | Intersection/Appro                    | oach         | ch Delay *  |     |  |  |  |
| Albany Shaker Road & | Wolf Road    |          |     | New Exit 4 Ramps & Albany Shaker Road |              |             |     |  |  |  |
|                      | EB LL        | 49.2     | D   | Albany Shaker Road                    | 28.0         | С           |     |  |  |  |
| Albany Shaker Road   | EB TT/R      | 9.2      | Α   | EB R                                  |              | 7.4         | А   |  |  |  |
|                      | EB R         | 8.3      | Α   | Albany Shaker Road WB L               |              | 78.4        | E   |  |  |  |
|                      | WB L         | 24.9     | С   | Albany Shaker Road WB TT              |              | 9.7         | Α   |  |  |  |
| Albany Shaker Road   | WBTT         | 11.8     | В   | New Exit 4 Ramps                      |              | 21.3        | С   |  |  |  |
|                      | WB R         | 5.5      | А   | New Exit 4 Ramps                      | NB R         |             | В   |  |  |  |
|                      | NB L         | 31.4     | С   | OVERALL                               |              | 20.2        | С   |  |  |  |
| Wolf Road            | NB L/TT      | 30.0     | С   | Unsig                                 | nalized Inte | tersections |     |  |  |  |
|                      | NB R         | 2.6      | Α   | Intersection/Appro                    | nach         | Delay *     | LOS |  |  |  |
| OVERALL              |              | 14.5     | В   | intersection/Appro                    | Dacii        | Delay       | LUS |  |  |  |
| Albany Shaker Road & | Old Wolf Roa | d        |     | Exit 4 NB Off-Ramp &                  | Wolf Road    |             |     |  |  |  |
| Albanii Chalian Daad | EB L         | 20.2     | С   | Exit 4 NB Off-Ramp                    | EB R         | 81.9        | F   |  |  |  |
| Albany Shaker Road   | EB TT        | 14.9     | В   |                                       |              |             |     |  |  |  |
| Albany Shaker Road   | WB TT/R      | 14.1     | В   | ]                                     |              |             |     |  |  |  |
| Old Wolf Road        | SB LL        | 32.1     | С   | 1                                     |              |             |     |  |  |  |
| Old Woll Road        | SB R         | 24.1     | С   |                                       |              |             |     |  |  |  |
| OVERALL              |              | 18.3     | В   | ]                                     |              |             |     |  |  |  |

<sup>\*</sup> Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

### **VISSIM Analysis Results**

### **Intersection Level of Service**

## 2046 (ETC+30) Flyover Alternative PM

| Signa                | alized Inter | sections |     | Sign                                  | alized Inter | sections    |     |  |  |  |
|----------------------|--------------|----------|-----|---------------------------------------|--------------|-------------|-----|--|--|--|
| Intersection/Appro   | ach          | Delay *  | LOS | Intersection/Appro                    | oach         | Delay *     | LOS |  |  |  |
| Albany Shaker Road & | Wolf Road    |          |     | New Exit 4 Ramps & Albany Shaker Road |              |             |     |  |  |  |
|                      | EB LL        | 82.5     | F   | Albany Shaker Road                    | 39.5         | D           |     |  |  |  |
| Albany Shaker Road   | EB TT/R      | 12.6     | В   | EB R                                  |              | 11.3        | В   |  |  |  |
|                      | EB R         | 6.8      | Α   | Albany Shaker Road WB L               |              | 78.2        | E   |  |  |  |
|                      | WB L         | 31.8     | С   | WB TT                                 |              | 12.5        | В   |  |  |  |
| Albany Shaker Road   | WBTT         | 26.0     | С   | New Exit 4 Ramps                      |              | 32.0        | С   |  |  |  |
|                      | WB R         | 32.6     | С   | New Exit 4 Namps                      | NB R         |             | С   |  |  |  |
|                      | NB L         | 30.4     | С   | OVERALL                               |              | 26.5        | С   |  |  |  |
| Wolf Road            | NB L/TT      | 53.1     | D   | Unsig                                 | nalized Inte | tersections |     |  |  |  |
|                      | NB R         | 3.3      | Α   | Intersection/Appro                    | ach.         | Delay *     | LOS |  |  |  |
| OVERALL              |              | 31.0     | С   | Intersection/Appro                    | acii         | Delay       | LU3 |  |  |  |
| Albany Shaker Road & | Old Wolf Roa | ıd       |     | Exit 4 NB Off-Ramp & \                | Nolf Road    |             |     |  |  |  |
| Albany Shaker Road   | EB L         | 24.8     | С   | Exit 4 NB Off-Ramp                    | EB R         | 7.4         | Α   |  |  |  |
| Albany Snaker Road   | EB TT        | 12.0     | В   |                                       |              |             |     |  |  |  |
| Albany Shaker Road   | WB TT/R      | 7.4      | Α   |                                       |              |             |     |  |  |  |
| Old Wolf Road        | SB LL        | 48.5     | D   |                                       |              |             |     |  |  |  |
| Olu Woli Kodu        | SB R         | 26.5     | С   |                                       |              |             |     |  |  |  |
| OVERALL              |              | 19.2     | В   | ]                                     |              |             |     |  |  |  |

<sup>\*</sup> Delay provided in seconds per vehicle.

L=Left, T=Through, R=Right, L/T=shared Left/Through, T/R=shared Through/Right

#### 10.2.2.2 Freeway Level of Service

Freeway analyses for I-87 were conducted in accordance with the Highway Capacity Manual (HCM2000) using HCS+. The analyses were conducted for the freeway segments between Exits 2 and 4, Exits 4 and 5, Exits 5 and 6, on the segments on the bridge over Albany-Shaker Road and on the segments under the proposed Flyover ramps. Ramp junctions were evaluated at Exits 2, 4 and 5. Weave areas were evaluated at Exit 2. All of these analyses were conducted for Existing, ETC, ETC+10 and ETC+20. The freeway segments over Albany-Shaker Road under the Flyover ramp were also evaluated for ETC+30.

The results of the AM and PM peak hour Flyover Alternative freeway analyses are summarized in Exhibits F.10.2.2.2-1 and F.10.2.2.2-2.

|  | Exhibit F.10.2.2.2-1 Freeway Level of Service Flyover Alternative AM Peak Hour |                     |        |                     |     |                     |     |                  |     |  |  |  |  |
|--|--|---------------------|--------|---------------------|-----|---------------------|-----|------------------|-----|--|--|--|--|
| ETC (2016) ETC+10 (2026) ETC+20 (2036) ETC+30 (2046) |  |                     |        |                     |     |                     |     |                  |     |  |  |  |  |
| Direction  | Segment/Junction   | Density<br>pc/mi/ln | LOS    | Density<br>pc/mi/ln | LOS | Density<br>pc/mi/ln | LOS | Density pc/mi/ln | LOS |  |  |  |  |
|  |  | F                   | REEWAY | SEGMENT             | S   |                     |     |                  |     |  |  |  |  |
| Exit 2W on to Exit 4 off 21.2 C 21.9 C 22.9 C        |  |                     |        |                     |     |                     |     |                  |     |  |  |  |  |
|  | Exit 4 off to Exit 4 off   | 16.0                | В      | 15.7                | В   | 16.0                | В   | 16.0             | В   |  |  |  |  |
| NB   | Exit 4 off to Exit 4 on  | 14.4                | В      | 14.4                | В   | 14.7                | В   | 14.4             | В   |  |  |  |  |
|  | Exit 4 on to Exit 5 off  | 13.2                | В      | 13.5                | В   | 13.7                | В   | -                | -   |  |  |  |  |
|  | Exit 5 on to Exit 6 off  | 12.5                | В      | 12.8                | В   | 13.0                | В   | -                | -   |  |  |  |  |
|  | Exit 6 on to Exit 5 off  | 29.4                | D      | 29.9                | D   | 30.1                | D   | -                | -   |  |  |  |  |
| SB   | Exit 5 on to Exit 4 off  | 35.0                | D      | 37.7                | Е   | 40.4                | Е   | 40.4             | Е   |  |  |  |  |
| OB   | Exit 4 off to Exit 4 on  | 31.0                | D      | 32.4                | D   | 33.4                | D   | 33.4             | D   |  |  |  |  |
|  | Exit 4 on to Exit 2W off   | 35.4                | Е      | 35.8                | Е   | 36.2                | Е   | -                | -   |  |  |  |  |
|  |  |                     | RAMP J | UNCTIONS            |     |                     |     |                  |     |  |  |  |  |
|  | Exit 2W on-ramp  | 18.0                | В      | 18.6                | В   | 19.5                | В   | -                | -   |  |  |  |  |
| NB   | Exit 4 off-ramp to ASR   | 20.3                | С      | 21.1                | С   | 22.3                | С   | -                | -   |  |  |  |  |
|  | Exit 4 off-ramp to Wolf  | 17.5                | В      | 17.2                | В   | 17.5                | В   | -                | -   |  |  |  |  |
|  | Exit 5 on-ramp   | 26.1                | С      | 27.8                | С   | 29.5                | D   | -                | -   |  |  |  |  |
| SB   | Exit 4 off-ramp  | 26.3                | С      | 27.7                | С   | 28.9                | D   | -                | -   |  |  |  |  |
| 05   | Exit 4 on-ramp   | 27.1                | С      | 28.5                | D   | 29.6                | D   | -                | -   |  |  |  |  |
|  | Exit 2W off-ramp   | 33.6                | D      | 33.8                | D   | 34.1                | D   | -                | -   |  |  |  |  |
| WEAVE AREAS  |  |                     |        |                     |     |                     |     |                  |     |  |  |  |  |
| NB   | Exit 2E on-ramp to Exit 2W off-ramp  | 21.8                | С      | 22.7                | С   | 23.9                | С   | -                | -   |  |  |  |  |
| SB   | Exit 2W on-ramp to Exit 2E off-ramp  | 32.4                | D      | 33.1                | D   | 33.8                | D   | -                | -   |  |  |  |  |

| Exhibit F.10.2.2.2-2 Freeway Level of Service Flyover Alternative PM Peak Hour |                                     |                  |        |                     |        |                     |        |                  |        |
|--|-------------------------------------|------------------|--------|---------------------|--------|---------------------|--------|------------------|--------|
|  |                                     | ETC (2           | 2016)  | ETC+10              | (2026) | ETC+20              | (2036) | ETC+30           | (2046) |
| Direction  | Segment/Junction                    | Density pc/mi/ln | LOS    | Density<br>pc/mi/ln | LOS    | Density<br>pc/mi/ln | LOS    | Density pc/mi/ln | LOS    |
|  |                                     | F                | REEWAY | SEGMENT             | S      |                     |        |                  |        |
|  | Exit 2W on to Exit 4 off            | 40.8             | Е      | 42.2                | Е      | 43.0                | Е      | -                | -      |
|  | Exit 4 off to Exit 4 off            | 30.8             | D      | 31.1                | D      | 30.8                | D      | 29.7             | D      |
| NB   | Exit 4 off to Exit 4 on             | 30.1             | D      | 30.4                | D      | 30.1                | D      | 29.0             | D      |
|  | Exit 4 on to Exit 5 off             | 30.9             | D      | 31.2                | D      | 31.2                | D      | -                | -      |
|  | Exit 5 on to Exit 6 off             | 32.3             | D      | 32.4                | D      | 32.5                | D      | -                | -      |
|  | Exit 6 on to Exit 5 off             | 17.2             | В      | 17.9                | В      | 18.6                | С      | -                | -      |
| SB   | Exit 5 on to Exit 4 off             | 23.9             | С      | 24.8                | С      | 25.5                | С      | 25.5             | С      |
| OB   | Exit 4 off to Exit 4 on             | 19.3             | С      | 19.9                | С      | 19.9                | С      | 19.6             | С      |
|  | Exit 4 on to Exit 2W off            | 25.5             | С      | 26.1                | D      | 27.1                | D      | -                | -      |
|  |                                     |                  | RAMP J | UNCTIONS            |        |                     |        |                  |        |
|  | Exit 2W on-ramp                     | 31.9             | D      | 32.3                | D      | 32.4                | D      | -                | -      |
| NB   | Exit 4 off-ramp to ASR              | 33.0             | D      | 33.6                | D      | 34.0                | D      | -                | -      |
|  | Exit 4 off-ramp to Wolf             | 29.3             | D      | 29.6                | D      | 29.3                | D      | -                | -      |
|  | Exit 5 on-ramp                      | 18.5             | В      | 19.3                | В      | 20.1                | С      | -                | -      |
| SB   | Exit 4 off-ramp                     | 18.8             | В      | 19.7                | В      | 20.4                | С      | -                | -      |
| 05   | Exit 4 on-ramp                      | 20.7             | С      | 21.4                | С      | 21.6                | С      | -                | -      |
|  | Exit 2W off-ramp                    | 26.3             | С      | 26.8                | С      | 27.6                | С      | -                | -      |
|  |                                     | ,                | WEAV   | E AREAS             |        | ,                   |        | ,                |        |
| NB   | Exit 2E on-ramp to Exit 2W off-ramp | 39.6             | Е      | 41.1                | Е      | 41.8                | Е      | -                | -      |
| SB   | Exit 2W on-ramp to Exit 2E off-ramp | 26.7             | С      | 26.5                | С      | 29.2                | D      | -                | -      |

During the AM peak hour, the following locations operate at LOS E under the ETC+20 condition in the southbound direction:

- Freeway Segments
  - o Exit 5 on to Exit 4 off
  - o Exit 4 on to Exit 2W off

During the PM peak hour, the following locations operate at LOS E under the ETC+20 condition in the northbound direction:

- Freeway Segments
  - Exit 2W on to Exit 4 off
- Weave Areas
  - o Exit 2E on to Exit 2W off

The operations for some of these locations are a change from a LOS D in the No-Build condition. The southbound freeway segments from Exit 5 to Exit 4 and Exit 4 to Exit 2W were approaching the LOS E threshold under the No-Build conditions and slightly higher volume for the Flyover Alternative pushed them over the LOS E threshold (>35 pc/m/l). The new ramp configuration and removal of the C-D Road is the primary reason for the increase in traffic volume between Exits 5 and 4. The segment from Exit 4 to Exit 2W was exactly at the threshold for No-Build ETC+20 AM and adds only 150 additional vehicles for the Flyover Alternative.

#### 10.3 Travel Time

Travel time on the network roadways was evaluated from the VISSIM models for the future No-Build and Build alternative conditions. The 2036 (ETC+20) travel time comparisons are presented in Exhibits 3.3.1.5 a and 3.3.1.5 b. These routes represent the major routes that measure whether the alternatives meets one of the key needs of the project: access improvements between I-87, Wolf Road and the Albany International Airport.

| Exhibit 3.3.1.5 a Travel Time Estimates 2036 (ETC+20) Build Alternatives AM Peak Hour |                    |                |                   |  |  |  |  |
|---|--------------------|----------------|-------------------|--|--|--|--|
| Roadway: Segment  | No-Build<br>(m:ss) | Diamond (m:ss) | Flyover<br>(m:ss) |  |  |  |  |
| Northbound  |                    |                |                   |  |  |  |  |
| I-87: Sand Creek Overpass to Airport  | 6:05               | 4:23           | 3:41              |  |  |  |  |
| I-87: Sand Creek Overpass to Exit 6 Off-Ramp  | 3:55               | 3:55           | 3:56              |  |  |  |  |
| Southbound  |                    |                |                   |  |  |  |  |
| I-87: Exit 6 On-Ramp to Airport 7:03 6:10 4:59  |                    |                |                   |  |  |  |  |
| I-87: Exit 6 On-Ramp to Wolf Road (Metro Park) 6:53 4:33 5:19                         |                    |                |                   |  |  |  |  |
| I-87: Exit 6 On-Ramp to Sand Creek Overpass   | 3:37               | 3:40           | 3:35              |  |  |  |  |

m:ss = minutes:seconds

| Exhibit 3.3.1.5 b Travel Time Estimates 2036 (ETC+20) Build Alternatives PM Peak Hour |                    |                |                   |  |  |  |  |
|---|--------------------|----------------|-------------------|--|--|--|--|
| Roadway: Segment  | No-Build<br>(m:ss) | Diamond (m:ss) | Flyover<br>(m:ss) |  |  |  |  |
| Northbound  |                    |                |                   |  |  |  |  |
| I-87: Sand Creek Overpass to Airport  | 7:37               | 4:40           | 3:52              |  |  |  |  |
| I-87: Sand Creek Overpass to Exit 6 Off-Ramp  | 4:36               | 4:38           | 4:33              |  |  |  |  |
| Southbound  |                    |                |                   |  |  |  |  |
| I-87: Exit 6 On-Ramp to Airport   | 5:57               | 6:37           | 5:09              |  |  |  |  |
| I-87: Exit 6 On-Ramp to Wolf Road (Metro Park) 6:05 4:49 5:23                         |                    |                |                   |  |  |  |  |
| I-87: Exit 6 On-Ramp to Sand Creek Overpass   | 3:46               | 3:43           | 3:41              |  |  |  |  |

m:ss = minutes:seconds

The Diamond Alternative reduces the expected travel time for major routes by 20% when compared to the No-Build Alternative. In the southbound direction during the AM peak hour, the travel time to the airport is reduced from 7:03 to 6:10 (0:53 reduction) and the travel time to Metro Park Road is reduced from 6:53 to 4:33 (2:20 reduction). In the northbound direction during the PM peak hour, the travel time to airport is reduced from 7:37 to 4:40 (2:57 reduction). However, the travel time to the airport in the southbound direction during the PM peak hour is estimated to be greater than the No-Build Alternative. This is a result of the longer distance a vehicle must travel to reach the Exit 4 southbound off-ramp and then to Albany-Shaker Road.

The Flyover Alternative reduces the expected travel time for major routes by 25% when compared to the No-Build Alternative. In the southbound direction during the AM peak hour, the travel time to the airport is reduced from 7:03 to 4:59 (2:07 reduction) and the travel time to Metro Park Road is reduced from 6:53 to 5:19 (1:34 reduction). In the northbound direction during the PM peak hour, the travel time to the airport is reduced from 7:37 to 3:52 (3:45 reduction).

For both alternatives, the northbound and southbound through travel times (between Sand Creek Road Overpass and Exit 6 ramps) on I-87 are approximately the same as No-Build. As a result, it is not anticipated that the Build Alternatives will increase delay for through vehicles on I-87.

Overall, the Flyover Alternative provides the most reductions in travel time when compared to the No-Build condition.

#### 10.4 Network Delay and Distance Traveled

Network-wide measures of effectiveness (MOE's) were gathered from the VISSIM models to compare the Build alternatives. Vehicle hours of delay (VHD) and vehicle miles traveled (VMT) are both presented in Exhibit 3.3.1.7 y.

| Exhibit 3.3.1.7 y Network Measures of Effectiveness 2036 (ETC+20) Design Year |        |        |        |  |  |  |
|---|--------|--------|--------|--|--|--|
| No-Build Diamond Flyover  |        |        |        |  |  |  |
| AM Peak Hour  |        |        |        |  |  |  |
| Vehicle Hours of Delay  | 274    | 219    | 195    |  |  |  |
| Vehicle Miles Traveled  | 55,940 | 56,530 | 57,480 |  |  |  |
| PM Peak Hour  |        |        |        |  |  |  |
| Vehicle Hours of Delay 785 402 372  |        |        |        |  |  |  |
| Vehicle Miles Traveled  | 63,480 | 70,450 | 66,140 |  |  |  |

As shown, the Build alternatives dramatically reduce the VHD during the PM peak hour, with the Flyover Alternative providing slightly better VHD improvements than the Diamond Alternative. For the Diamond Alternative, the VHD decreases by 20% for the AM Peak Hour and 49% for the PM Peak Hour. For the Flyover Alternative, the VHD decreases by 29% for the AM Peak Hour, and 53% for the PM Peak Hour. The VMT increases for both of the Build alternatives compared to the No-Build condition because they both have greater volume demand than the No-Build condition (i.e. more volume is diverted to the improved interchange). So although the distance that some vehicles travel within the network is reduced due to the Build alternative geometry, the increased number of vehicles in turn causes increased VMT.

#### 10.5 Ramp Queues

The ETC+20 design year 95<sup>th</sup> percentile queues for the I-87 off-ramps at Exits 4, 5, and 6 were determined using Synchro 7. Exhibit 3.3.1.7 z below provides a summary of the ETC+20 design year queues; the No-Build queues are provided for comparison purposes.

| Exhibit 3.3.1.7 z<br>95 <sup>th</sup> Percentile Queues - ETC+20 Design Year<br>No-Build & Diamond Alternative |    |      |     |     |     |  |  |
|--|----|------|-----|-----|-----|--|--|
| Approach mvmt No-Build Diamond No-Build Diamond PM PM  |    |      |     |     |     |  |  |
| Exit 4 Ramps   |    |      |     |     |     |  |  |
| Evit 4 NR Off Pamp   | L  | 310* | 159 | 380 | 266 |  |  |
| Exit 4 NB Off-Ramp   | R  | 137  | 103 | 123 | 41  |  |  |
|  | LR | 878  | -   | 551 | -   |  |  |
| Exit 4 SB Off-Ramp   | L  | -    | 257 | -   | 482 |  |  |
|  | R  | -    | 154 | -   | 471 |  |  |
| Exit 5 Ramps   |    |      |     |     |     |  |  |
| Exit 5 NB Off-Ramp   | L  | 157  | 161 | 418 | 408 |  |  |
| Exit 5 NB Oil-Railip   | TR | 59   | 22  | 0   | 0   |  |  |
| Evit 5 SP Off Domo   | L  | 395  | 767 | 410 | 740 |  |  |
| Exit 5 SB Off-Ramp   | TR | 223  | 494 | 336 | 249 |  |  |
| Exit 6 Ramps   |    |      |     |     |     |  |  |
| Exit 6 NB Off-Ramp   | Ĺ  | 350  | 336 | 237 | 190 |  |  |
| Exit o NB OII-Namp   | R  | 50   | 36  | 50  | 21  |  |  |
| Evit 6 SR Off Pamp   | L  | 174  | 147 | 216 | 219 |  |  |
| Exit 6 SB Off-Ramp   | R  | 494  | 540 | 661 | 593 |  |  |

<sup>\*</sup> All 95<sup>th</sup> Percentile Queues shown in feet.

As shown, all of the Diamond Alternative queues are estimated to be approximately the same or less than the No-Build queues with the exception of the Exit 5 southbound off-ramp. The Exit 5 southbound left-turn movement for both peak periods and the through/right turn movement during the AM peak hour are estimated to have longer queues than the No-Build Alternative. The longer queues at this off-ramp are a result of the elimination of the C-D Road to Old Wolf Road, and the resulting redistribution of volumes in the area. However, it is estimated that the queues for these movements will not extend back to the I-87 mainline.

It is also noted that existing queue observations show that the Exit 4 SB off-ramp often backs to the I-87 mainline during the AM peak hour. The extent of that queue is not captured in the No-Build Synchro results shown since it is a cumulative result of the southbound queue on Old Wolf Road at Albany-Shaker Road backing to the intersection with the Exit 4 SB off-ramp. Since the C-D Road is eliminated with the Diamond Alternative, this queuing condition is also eliminated.

The ETC+20 design year 95<sup>th</sup> percentile queues for the I-87 off-ramps at Exits 4, 5, and 6 were determined using Synchro 7. Exhibit 3.3.1.7 aa below provides a summary of the ETC+20 design year queues; the No-Build queues are provided for comparison purposes.

| Exhibit 3.3.1.7 aa<br>95 <sup>th</sup> Percentile Queues - ETC+20 Design Year<br>No-Build & Flyover Alternative |      |                |               |                |               |  |  |  |
|---|------|----------------|---------------|----------------|---------------|--|--|--|
| Approach  | mvmt | No-Build<br>AM | Flyover<br>AM | No-Build<br>PM | Flyover<br>PM |  |  |  |
| Exit 4 Ramps  |      |                |               |                |               |  |  |  |
| Exit 4 NB Off-Ramp to Wolf Rd   | L    | 310*           | ı             | 380            | 1             |  |  |  |
| Exit 4 NB OII-Ramp to Woll Ru   | R    | 137            | 57            | 123            | 21            |  |  |  |
| Exit 4 SB Off-Ramp to Old Wolf Rd   | LR   | 878            | -             | 551            | -             |  |  |  |
| Evit 4 Off Romp to ASP  | L    | -              | 367           | -              | 728           |  |  |  |
| Exit 4 Off-Ramp to ASR  | R    | -              | 534           | -              | 518           |  |  |  |
| Exit 5 Ramps  |      |                |               |                |               |  |  |  |
| Evit 5 ND Off Domp  | L    | 157            | 156           | 418            | 493           |  |  |  |
| Exit 5 NB Off-Ramp  | TR   | 59             | 21            | 0              | 0             |  |  |  |
| Evit 5 CD Off Domp  | L    | 395            | 385           | 410            | 610           |  |  |  |
| Exit 5 SB Off-Ramp  | TR   | 223            | 276           | 336            | 231           |  |  |  |
| Exit 6 Ramps  | •    |                |               |                |               |  |  |  |
| Exit 6 NB Off-Ramp  | Ĺ    | 350            | 380           | 237            | 189           |  |  |  |
| EXILO NO OII-NAITIP   | R    | 50             | 53            | 50             | 14            |  |  |  |
| Exit 6 SB Off-Ramp  | Ĺ    | 174            | 201           | 216            | 229           |  |  |  |
| Exit 0 3B Oil-Railip  | R    | 494            | 554           | 661            | 615           |  |  |  |

<sup>\*</sup> All 95<sup>th</sup> Percentile Queues shown in feet.

For the Flyover Alternative, all of the Build Alternative queues are estimated to be approximately the same or less than the No-Build queues with the exception of the Exit 4 off-ramp to Albany-Shaker Road and the Exit 5 southbound left-turn movement during the PM peak hour. It is estimated that the Exit 4 off-ramp to Albany-Shaker Road queue will be longer than No-Build due to the combination of the northbound off-ramp left-turn volume and the southbound off-ramp volume at the new intersection. However, the queue is not estimated to extend back to the I-87 mainline. As with the Diamond Alternative, the Exit 5 SB off-ramp queue is estimated to be longer than the No-Build Alternative due to the elimination of the C-D road, and the resulting redistribution of volume. It is not estimated that the southbound queue will extend back to the I-87 mainline in this alternative.

Like the Diamond Alternative, since the C-D Road is eliminated with the Flyover Alternative, the existing queuing condition of the Exit 4 SB off-ramp to the I-87 mainline is eliminated.

#### 11.0 Safety Considerations, Accident History and Analysis

NYSDOT Region 1 conducted an accident history investigation for the project study area. The accident data covered a three year period from January 1, 2007 to December 31, 2009 and covered the project study area on I-87, Wolf Road, Watervliet-Shaker Road, Albany-Shaker Road and Old Wolf Road. They provided an updated set of data that included an additional three months of data and included a signal study that was conducted at the intersection of Albany-Shaker Road & Old Wolf Road/I-87 SB on-ramp. The memos, accident records and collision diagrams are included in Attachment F.

The current High Accident Location (HAL) period is from November 1, 2007 to October 31, 2009. There were no HALs on the section of I-87 studied from RM 2016 (Colonie Town Line) to RM 2042 (just north of the Exit 5 northbound on ramp). Wolf Road (NY 910B) was a Priority Investigation Location (PIL) from RM 1010 (Computer Drive) to RM 1015 (just south of Marcus Boulevard) and from RM 1016 (Marcus Boulevard) to 1019 (Albany-Shaker Road). Watervliet-Shaker Road (NY 155) was a Safety Deficient Location (SDL) from RM 3058 (Sherwood Drive) to RM 3060 (Old Niskayuna Road).

I-87 is a six lane divided Urban Principal Arterial Interstate highway with full control of access. There were 303 total accidents on this segment of I-87 during the study period. The accident rate was 0.87 accidents per million vehicle miles (acc/mvm) which is less than the expected accident rate of 1.10 acc/mvm for similar highways statewide. There was one fatality and no accidents involving pedestrians or bicyclists.

Wolf Road is a four lane divided Urban Principal Arterial highway with free access. There were 52 accidents in the first section studied (RM 1010 to 1015) during the January 1, 2007 to March 31, 2010 study period. The accident rate was 2.41 acc/mvm which is less than the expected accident rate of 3.59 acc/mvm for similar highways statewide. There was one accident involving a pedestrian and no accidents involving bicyclists.

There were 132 accidents in the second section of Wolf Road studied (RM 1016 to 1019) and the accident rate was 9.46 acc/mvm which is greater than the expected accident rate of 3.59 acc/mvm for similar highways statewide. There were no accidents involving pedestrians or bicyclists.

Watervliet-Shaker Road is a four lane undivided Urban Minor Arterials highway with free access. There were 46 accidents on the SDL section (RM 3058 to 3061 (Feiden Lane)) evaluated during the period January 1, 2007 to September 30, 2010. The accident rate of 8.79 acc/mvm is greater than the expected accident rate of 4.27 acc/mvm for similar highways statewide. There were no accidents involving pedestrians or bicyclists.

Albany-Shaker Road (CR 151) carries NY Touring Route 155. There were 55 accidents on the section studied, and the accident rate was 1.98 acc/mvm. This rate cannot be compared to the statewide average as it is not a state route. There were no accidents involving pedestrians or bicyclists.

Old Wolf Road (CR 153) also carries NY Touring Route 155. There were 55 accidents on the section studied, and the accident rate was 5.11 acc/mvm. This rate cannot be compared to the statewide average as it is not a state route. There were no accidents involving pedestrians and one involving a bicyclist.

The majority of accidents on all the roadways reviewed in the study occurred during the peak hours and are congestion related.

A summary crash severity for the project area is provided in Exhibit 2.3.1.8 a and a summary of accident type for the project area intersections is provided in Exhibit 2.3.1.8 b.

| Exhibit 2.3.1.8 a<br>Crash Severity<br>Jan 1, 2007 to Dec 31, 2009 |                    |                            |                    |          |  |  |
|--|--------------------|----------------------------|--------------------|----------|--|--|
| Facility Type  | Non-<br>Reportable | Property<br>Damage<br>Only | Personal<br>Injury | Fatality |  |  |
| Non-freeway  | 0%                 | 62%                        | 38%                | 0%       |  |  |
| Freeway  | 22%                | 53%                        | 25%                | 0%*      |  |  |

<sup>\*</sup> There was one fatality reported during the studied period.

| Exhibit 2.3.1.8 b<br>Crash Types: Intersections<br>Jan 1, 2007 to Dec 31, 2009 |            |                |             |              |                 |              |               |              |         |       |
|--|------------|----------------|-------------|--------------|-----------------|--------------|---------------|--------------|---------|-------|
| Link   | Head<br>On | Right<br>Angle | Rear<br>End | Left<br>Turn | Fixed<br>Object | Over<br>take | Side<br>swipe | Ped/<br>Bike | Backing | Total |
| Wolf Road & Metro Park<br>Road   | 1          | 3              | 3           | 2            | 0               | 2            | 0             | 0            | 0       | 11    |
| Wolf Road & I-87 Exit 4<br>NB off-ramp   | 0          | 0              | 9           | 0            | 0               | 3            | 0             | 0            | 0       | 12    |
| Wolf Road & Albany-<br>Shaker Road   | 0          | 10             | 42          | 27           | 0               | 6            | 0             | 0            | 0       | 85    |
| Albany-Shaker Road & Old Wolf Road/I-87 Exit 4 SB on-ramp                      | 0          | 1              | 11          | 5            | 1               | 1            | 2             | 0            | 0       | 21    |
| Old Wolf Road & I-87 Exit<br>4 SB off-ramp                                     | 0          | 0              | 33          | 0            | 1               | 0            | 0             | 0            | 0       | 34    |
| Watervliet-Shaker Road & I-87 Exit 5 NB ramps                                  | 0          | 1              | 2           | 4            | 2               | 0            | 0             | 0            | 0       | 9     |
| Watervliet-Shaker Road & I-87 Exit 5 SB ramps                                  | 0          | 2              | 6           | 4            | 0               | 1            | 0             | 1            | 1       | 15    |
| Total  | 1          | 17             | 106         | 42           | 4               | 13           | 2             | 1            | 1       | 187   |

The accident rates for intersections are expressed as accidents per million entering vehicles (ACC/MEV) and accident rates for roadway links are expressed as accidents per million vehicle miles (ACC/MVM). For intersections on or including State facilities, the statewide average accident rate for similar facilities is provided for comparison purposes. Accident rates for the project area intersections are summarized in Exhibit 2.3.1.8 c.

| Exhibit 2.3.1.8 c Intersection Accident Rates             |                          |                                 |  |  |  |  |
|---|--------------------------|---------------------------------|--|--|--|--|
| Intersection  | Accident Rate<br>ACC/MEV | Statewide<br>Average<br>ACC/MEV |  |  |  |  |
| Wolf Road & Metro Park Road                               | 0.27                     | 0.15                            |  |  |  |  |
| Wolf Road & I-87 Exit 4 NB off-ramp                       | 0.33                     | 0.11                            |  |  |  |  |
| Wolf Road & Albany-Shaker Road                            | 1.54                     | 0.11                            |  |  |  |  |
| Albany-Shaker Road & Old Wolf Road/I-87 Exit 4 SB on-ramp | 0.46                     | 0.11                            |  |  |  |  |
| Old Wolf Road & I-87 Exit 4 SB off-ramp                   | 1.77                     | 0.19                            |  |  |  |  |
| Watervliet-Shaker Road & I-87 Exit 5 NB ramps             | 0.35                     | 0.15                            |  |  |  |  |
| Watervliet-Shaker Road & I-87 Exit 5 SB ramps             | 0.66                     | 0.15                            |  |  |  |  |

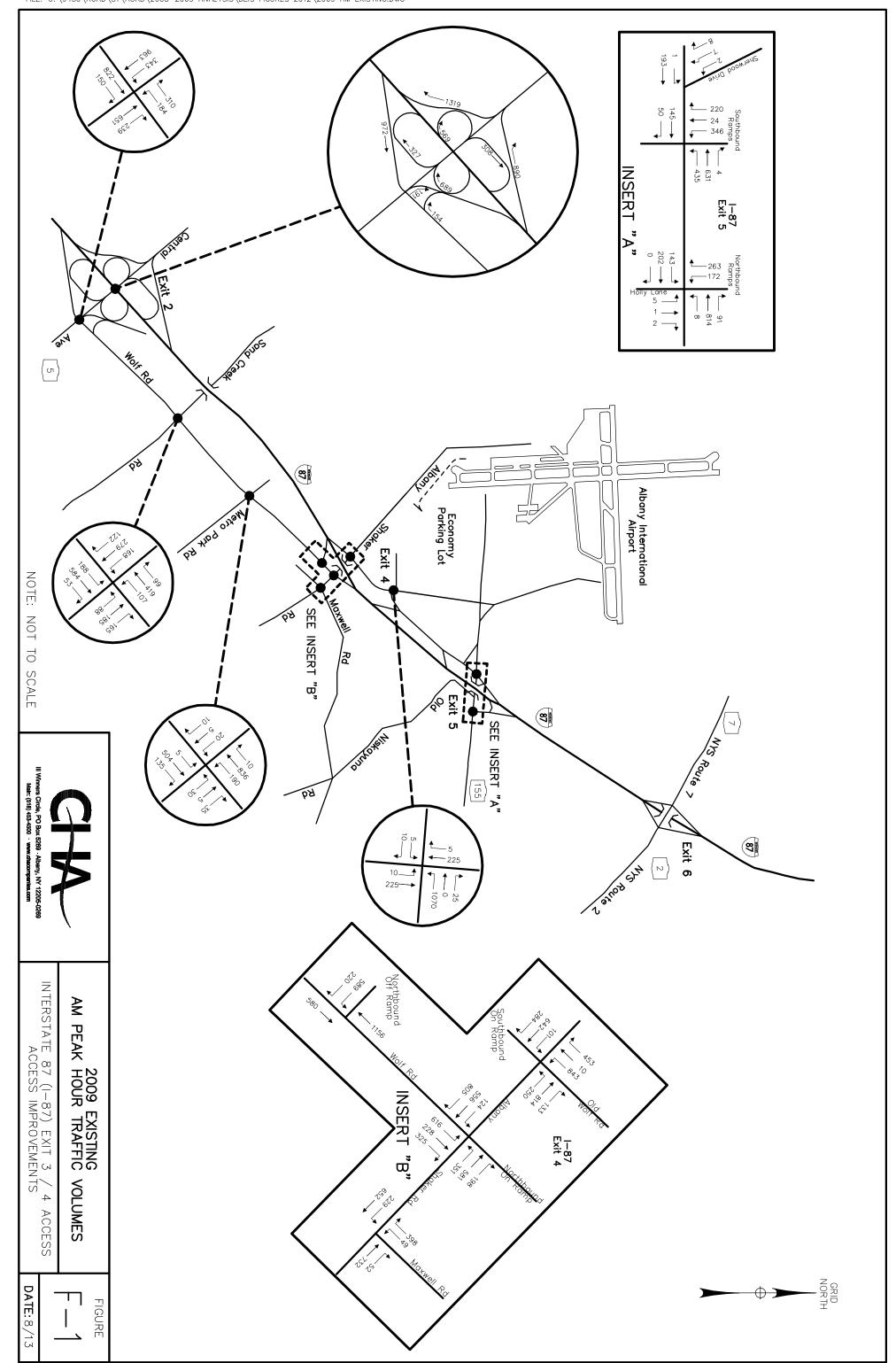
As summarized in Exhibit 2.3.1.8 c, all of the studied intersections exceed statewide averages for similar facilities. Locations that particularly stand out as greatly exceeding the statewide average are Wolf Road & Albany-Shaker Road and Old Wolf Road & I-87 Exit 4 SB off-ramp. The predominant accident types at Wolf Road & Albany-Shaker Road were rear end and left-turn. At Old Wolf Road & I-87 Exit 4 SB off-ramp, all but one of the reported accidents were rear ends. A high occurrence of rear end accidents typically correlates to traffic congestion where vehicles are in stop-and-go traffic and/or reaching the end of forming queues.

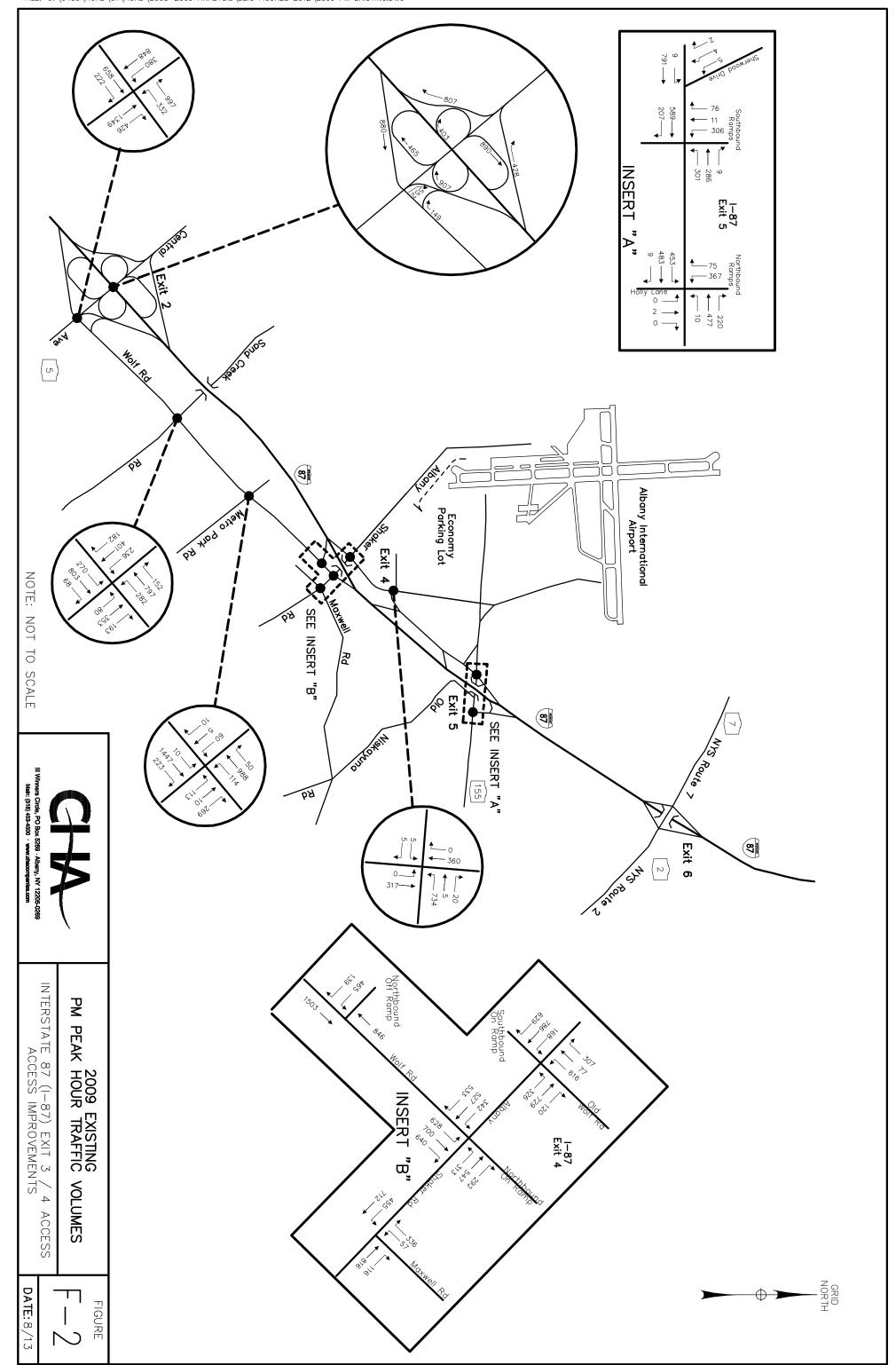
The dismissed Upgrade Alternative did not address many of the crash patterns in the study area since the alternative only included adding additional capacity at the existing intersections and is not estimated to divert traffic to other routes. The existing C-D road between Watervliet-Shaker Road and Old Wolf Road, which also serves the Exit 4 southbound off-ramp and Exit 5 southbound on-ramp, is maintained with the Upgrade Alternative. In addition to the 34 accidents at the intersection with Old Wolf Road & I-87 SB off-ramp, another 14 accidents occurred on the C-D road during the studied period. Traffic routinely backs up on the C-D road to the Exit 4 southbound off-ramp. While it would be anticipated that the number of accidents would be reduced due to less congestion under the alternative, the geometric conditions in this area would remain the same.

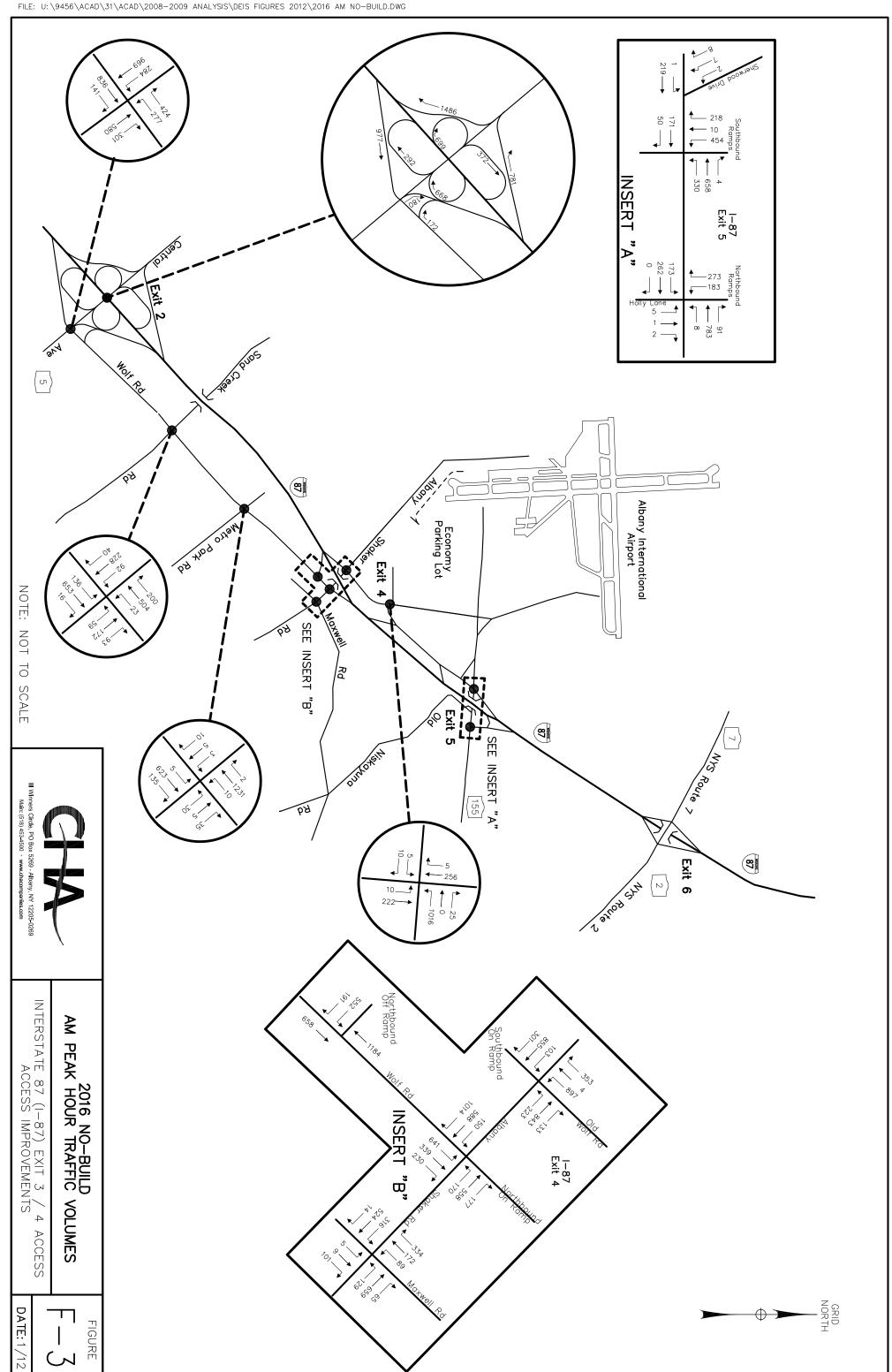
The Flyover and Diamond Alternatives both remove the C-D road and the existing Exit 4 and 5 ramp configuration, therefore eliminating those accidents and resulting in an accident cost savings of \$584,000 per year (\$11,680,000 over 20 years). The traffic volumes at the Wolf Road & Albany-Shaker Road intersection are also reduced under these alternatives which will improve operations and safety. The Diamond Alternative removes the Exit 4 northbound on-ramp and reduces the peak hour volumes at this intersection by 42 percent. The Flyover Alternative reduces the peak hour volumes at this intersection by 35 percent.

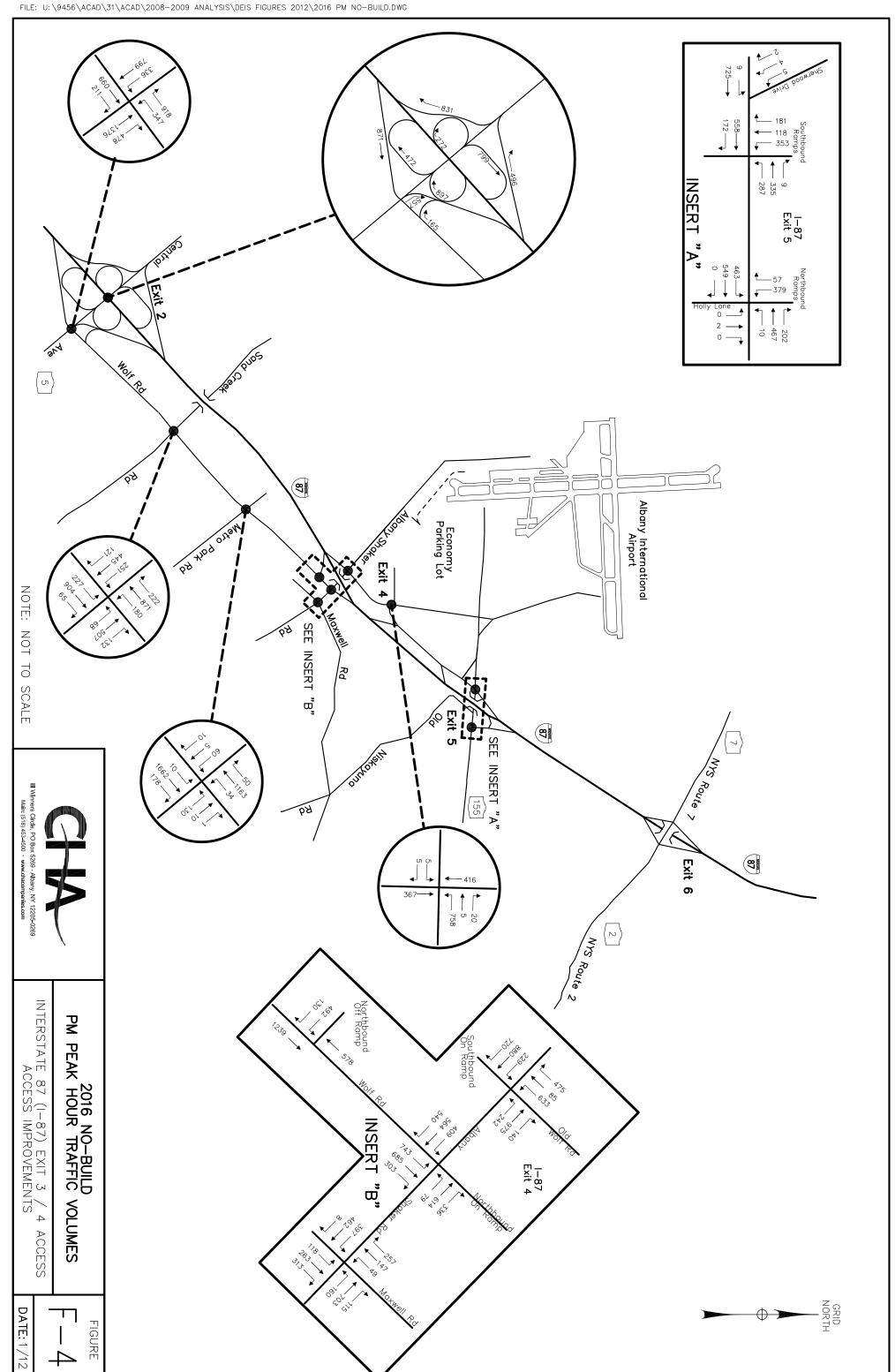
The Flyover and Diamond Alternatives will also improve safety at the intersections with Albany-Shaker Road & Old Wolf Road/I-87 Exit 4 southbound on-ramp and Wolf Road & I-87 Exit 4 northbound off-ramp. The Flyover Alternative eliminates the I-87 Exit 4 southbound on-ramp at the existing intersection and modifies the I-87 Exit 4 northbound off-ramp to be unsignalized with right-turns onto Wolf Road southbound only. The Diamond Alternative eliminates the I-87 Exit 4 southbound on-ramp and the I-87 Exit 4 northbound off-ramp at their existing intersections. These modifications reduce volume and congestion.

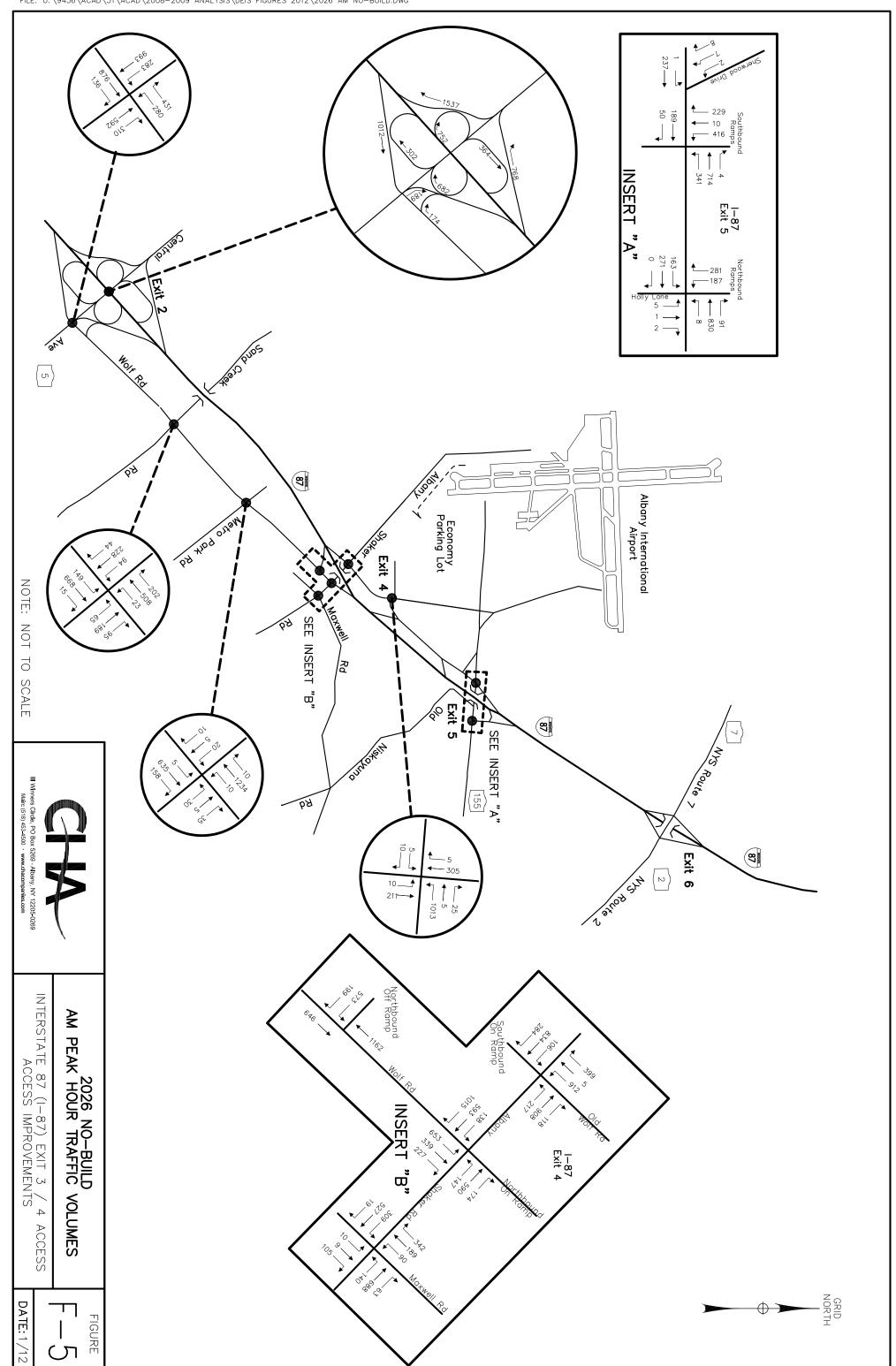
ATTACHMENT A FIGURES

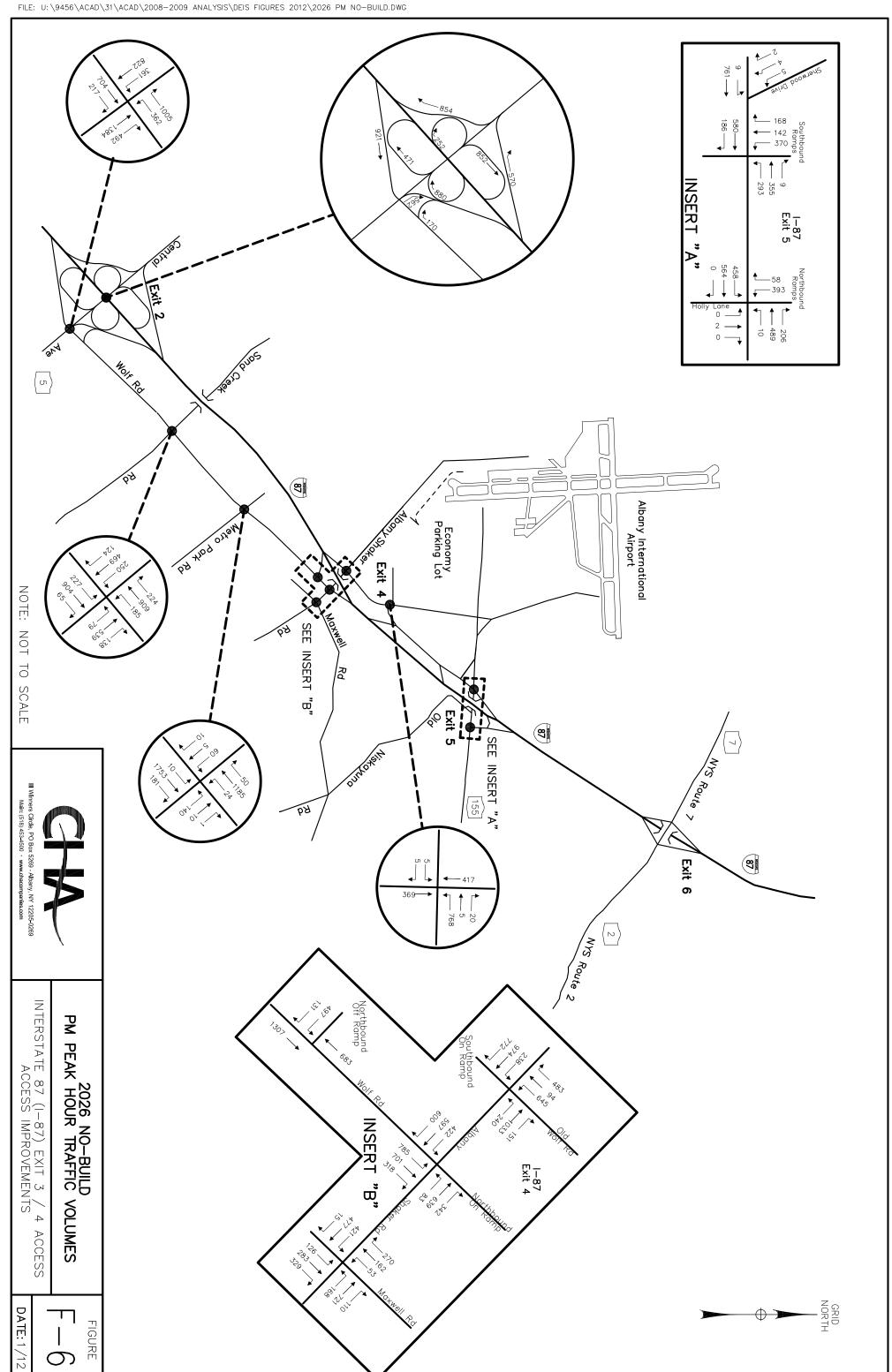


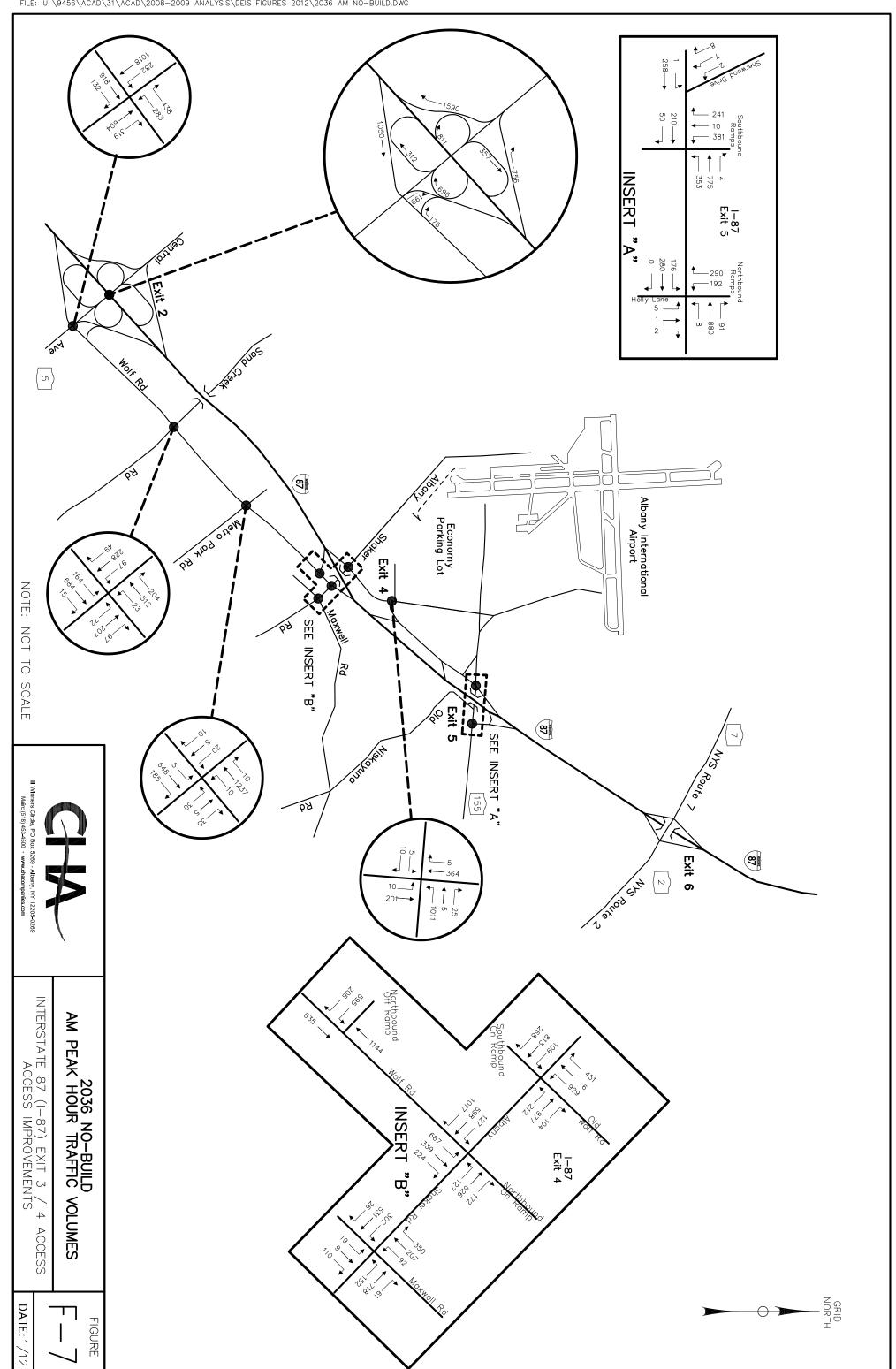


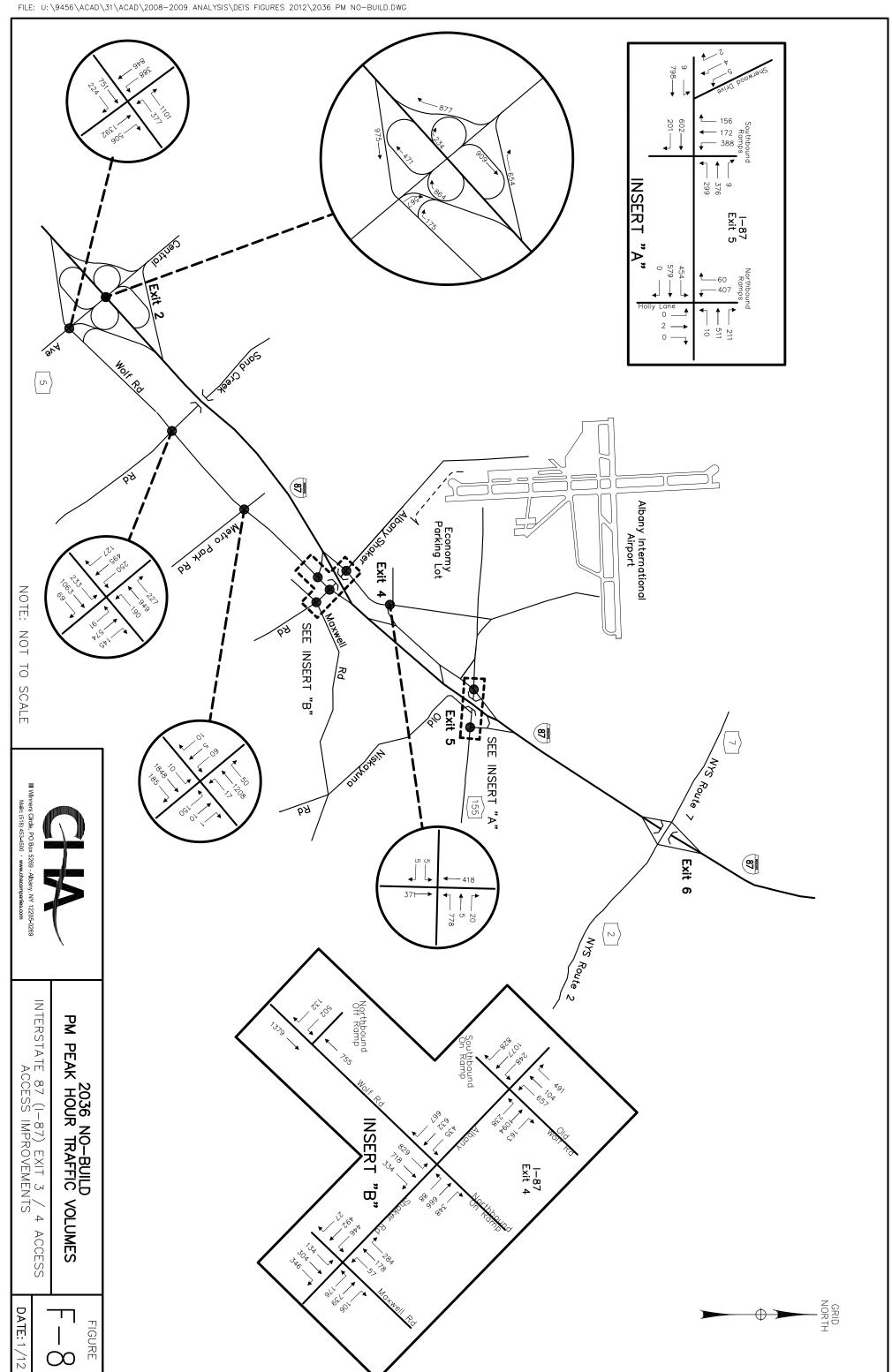


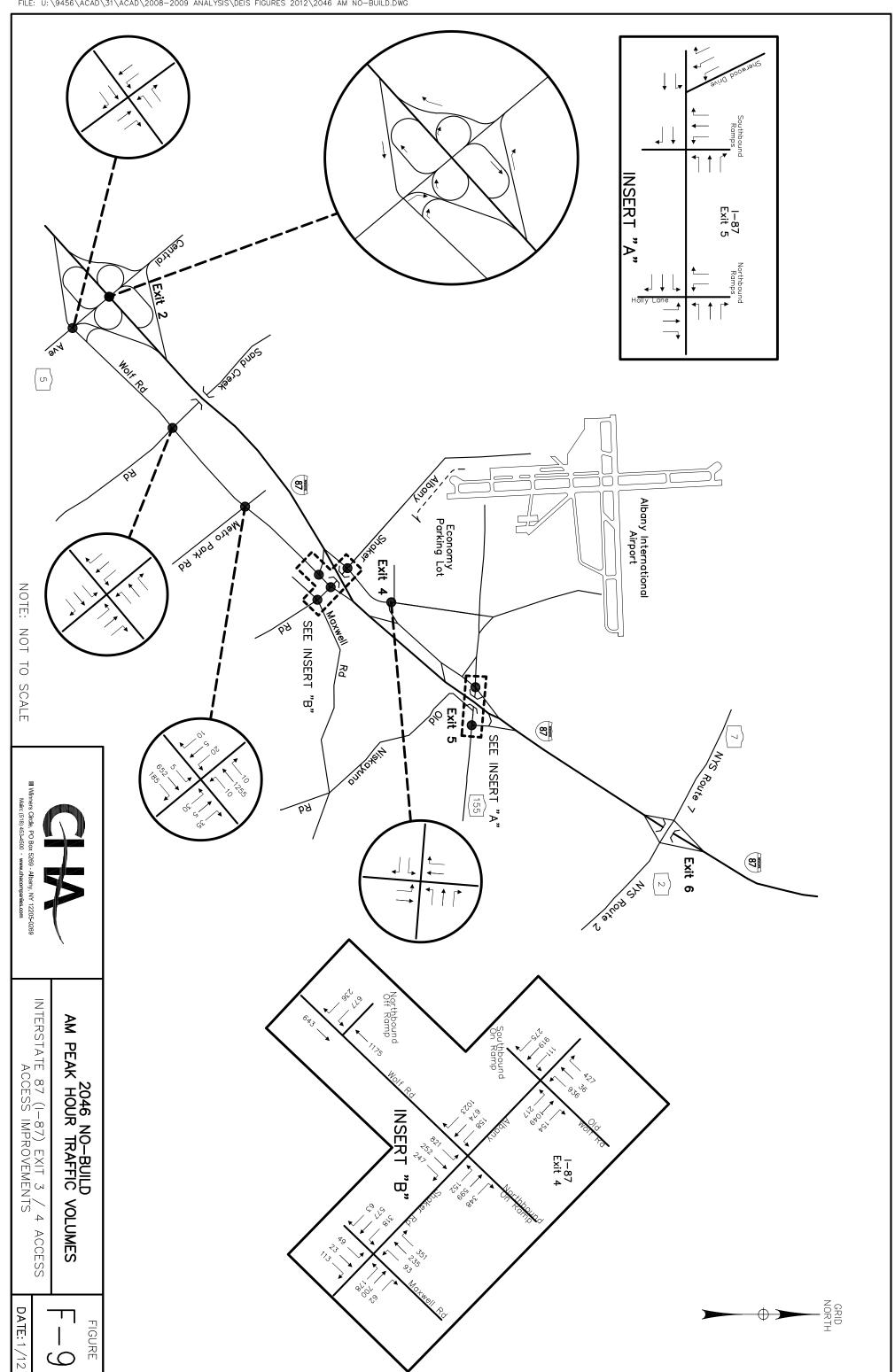


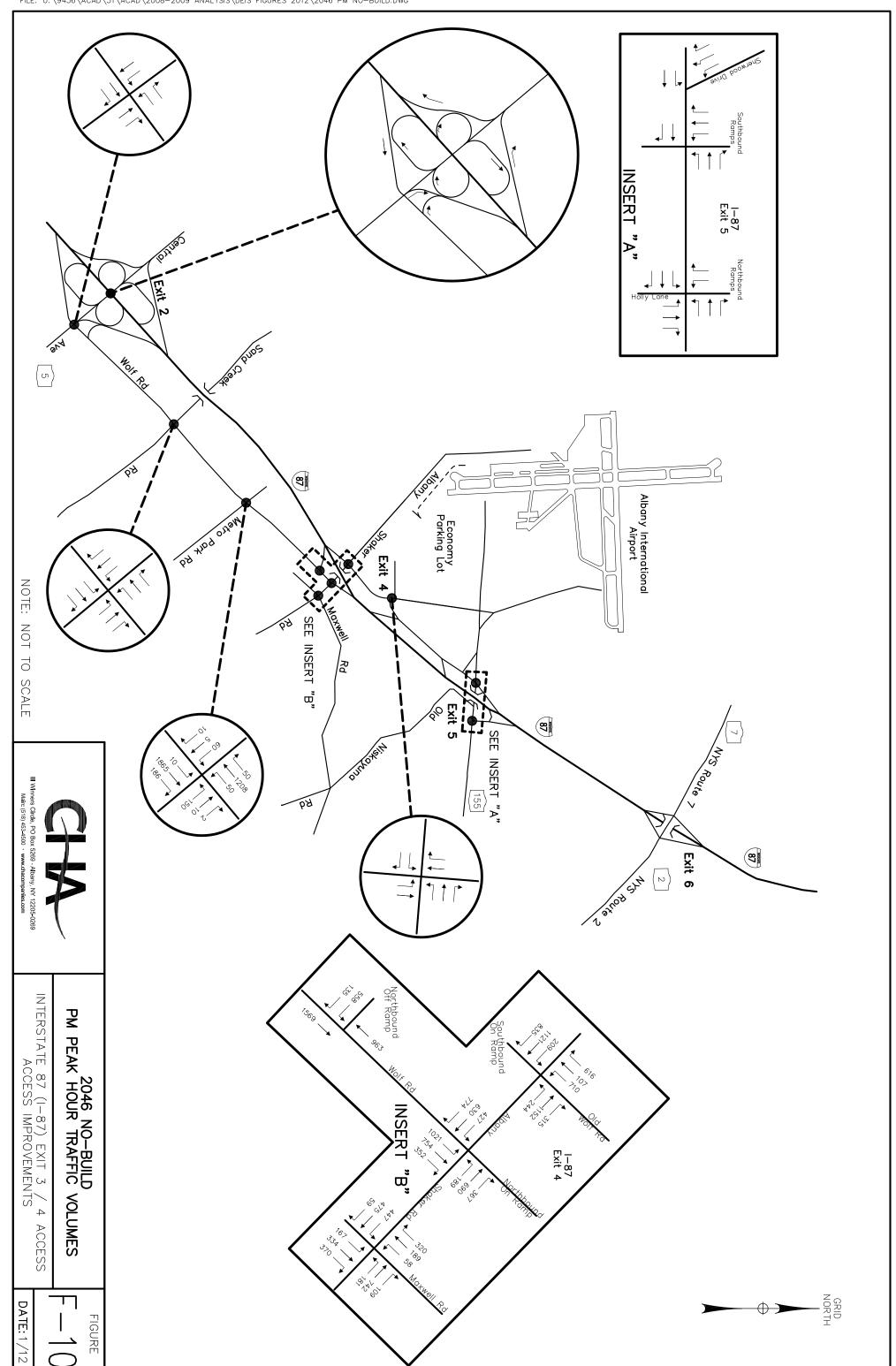


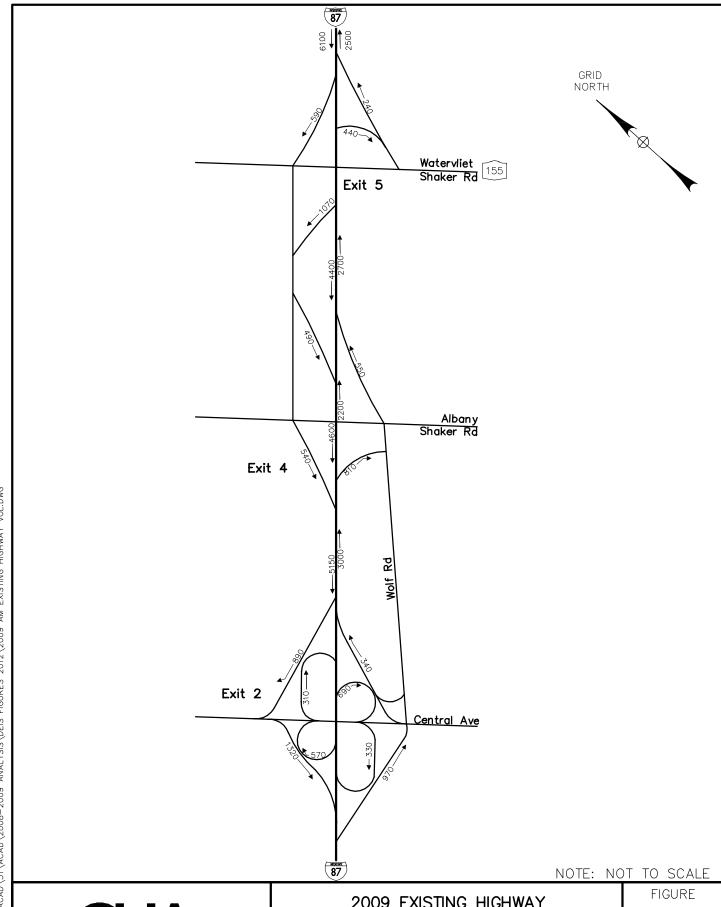










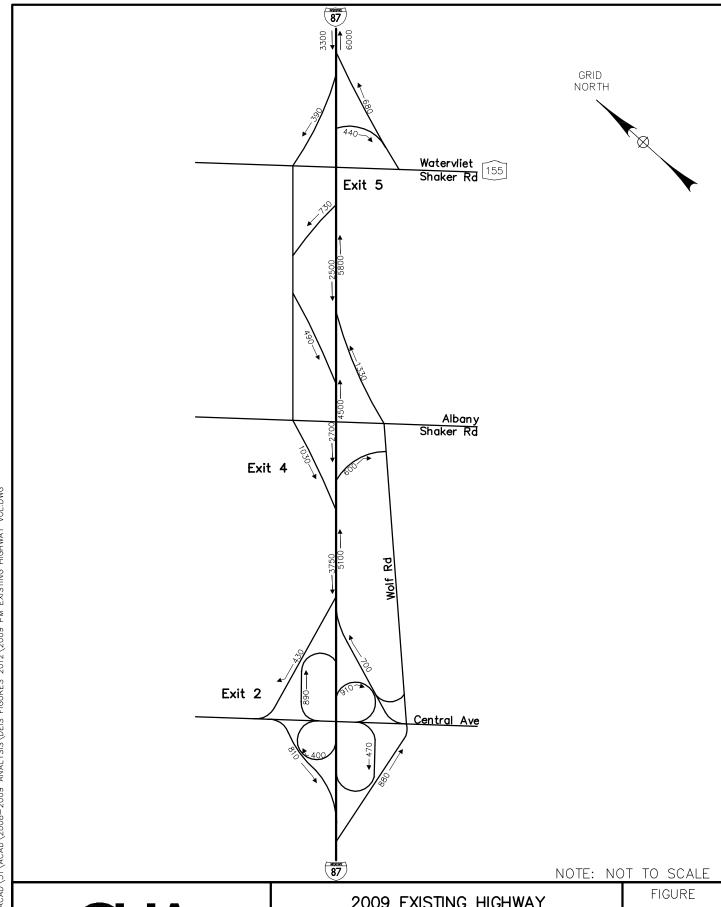




2009 EXISTING HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

F-11

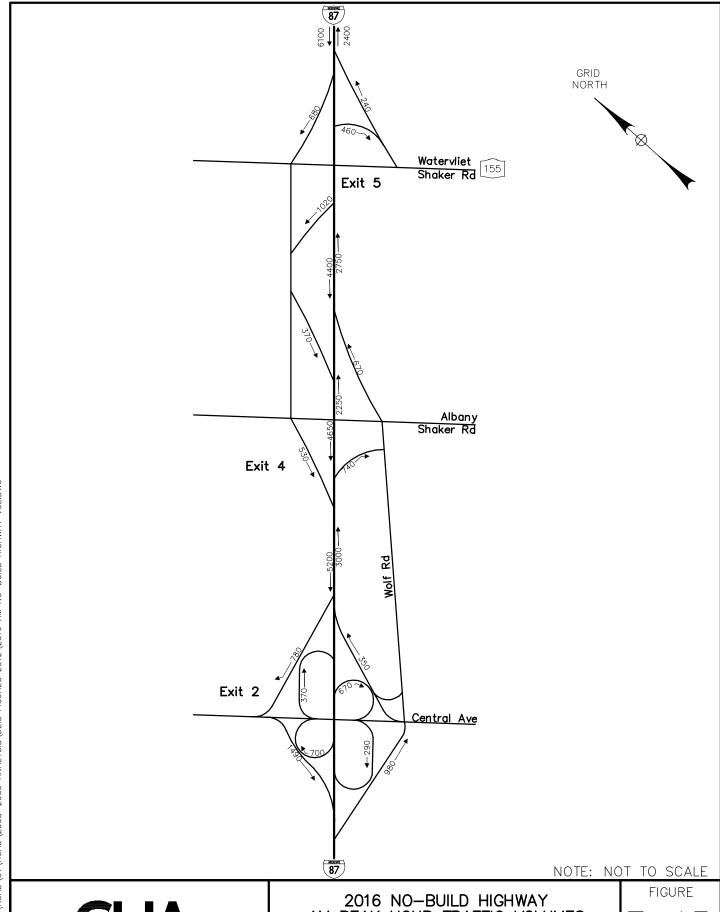




2009 EXISTING HIGHWAY PM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

F - 12





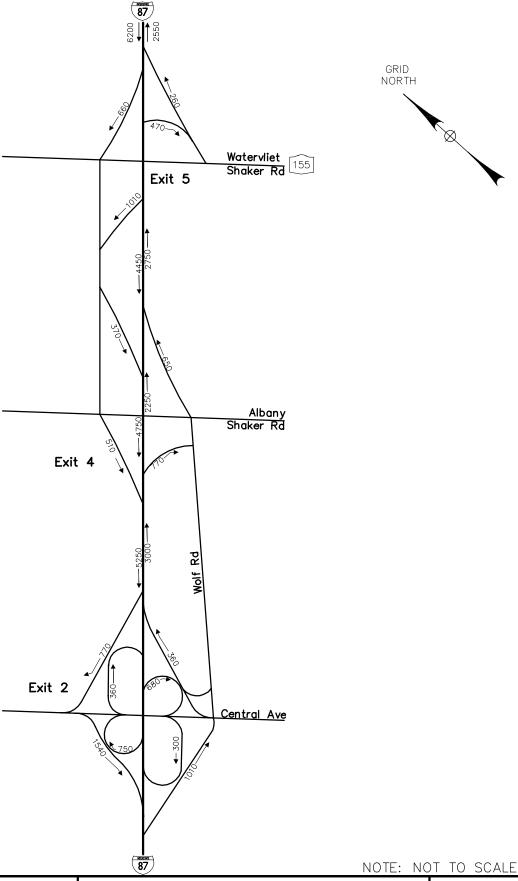
## 2016 NO-BUILD HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4ACCESS IMPROVÉMENTS

GRID NORTH Watervliet
Shaker Rd Exit 5 NOTE: NOT TO SCALE **FIGURE** 

**DATE:** 8/13

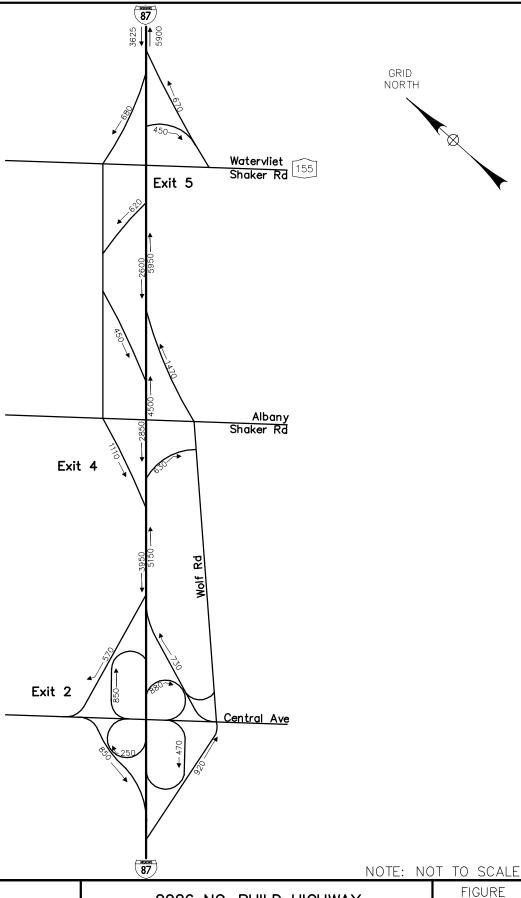
87



2026 NO-BUILD HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

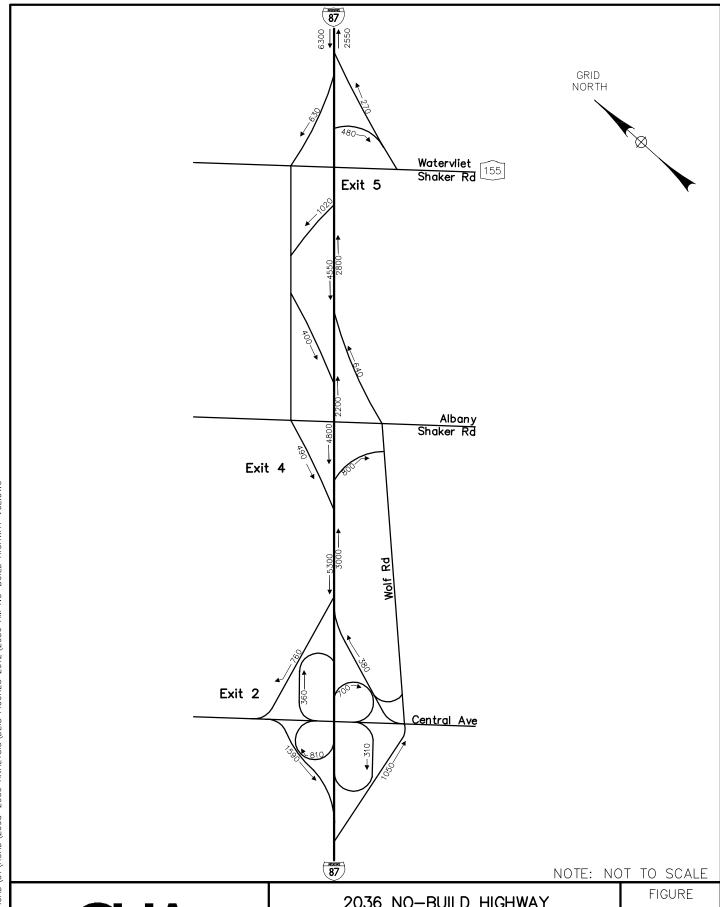
INTERSTATE 87 (I-87) EXIT 3 / 4ACCESS IMPROVÉMENTS

**FIGURE** 



2026 NO-BUILD HIGHWAY PM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4ACCESS IMPROVÉMENTS

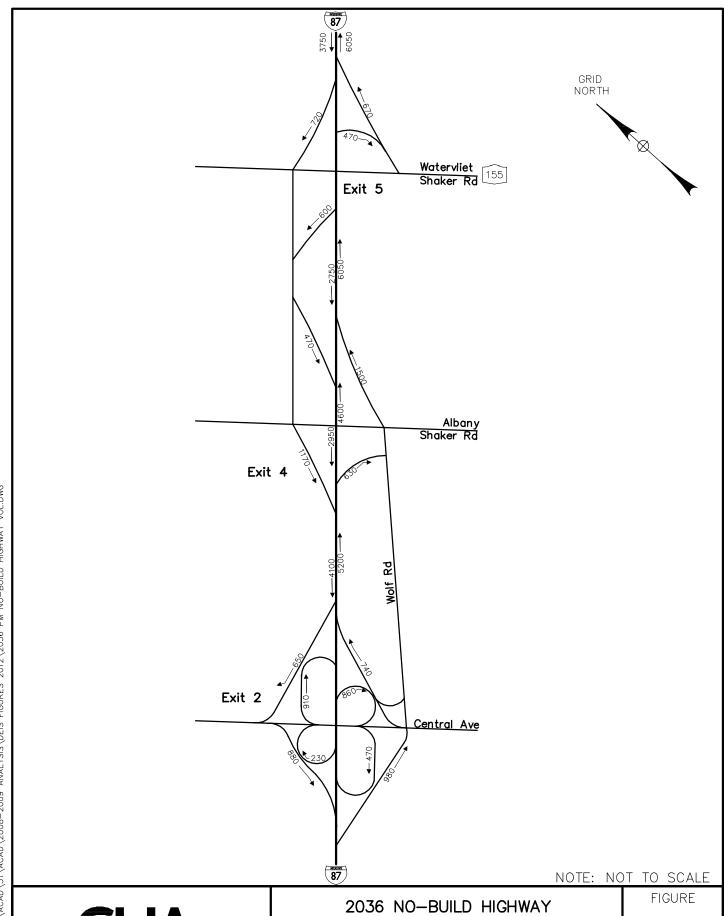




2036 NO-BUILD HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

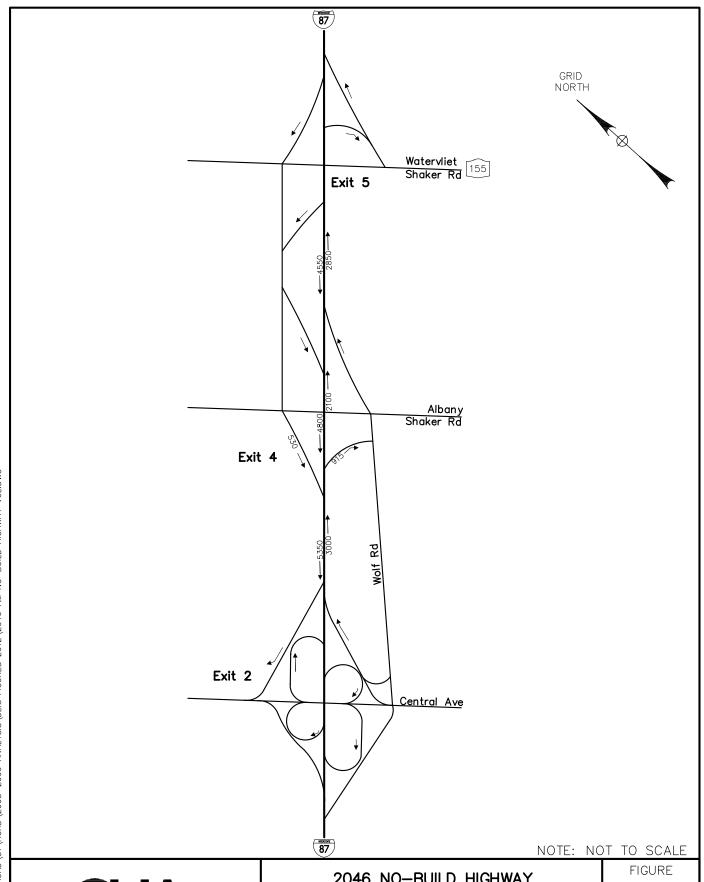
F - 17





2036 NO-BUILD HIGHWAY PM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4ACCESS IMPROVÉMENTS



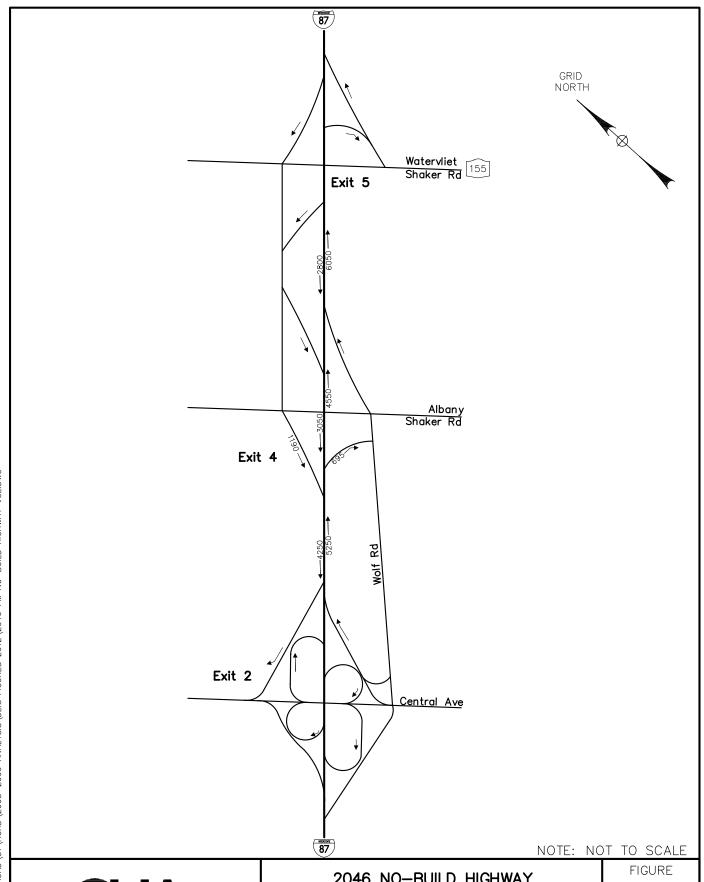


## 2046 NO-BUILD HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS

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**DATE:** 1/12



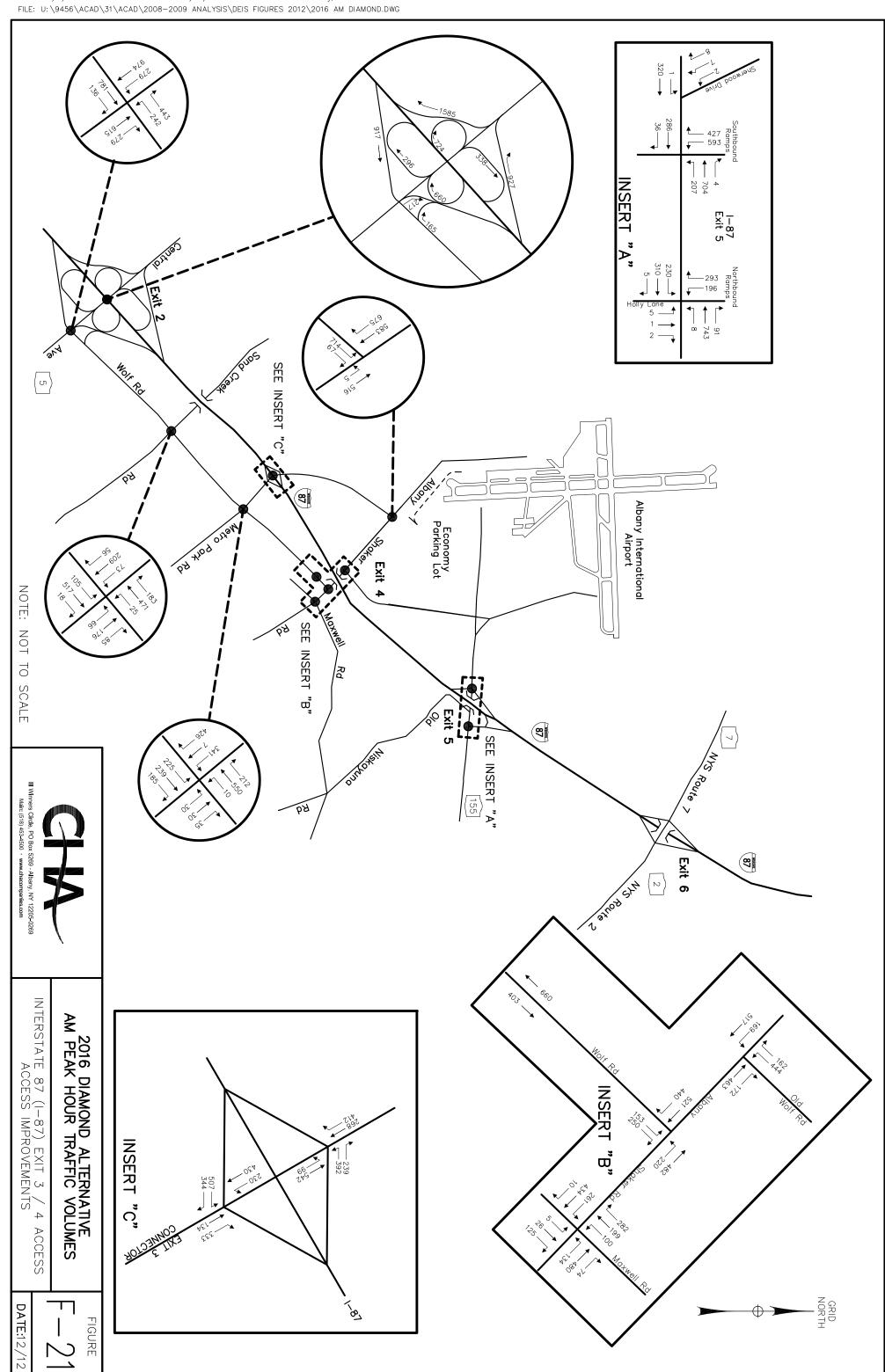


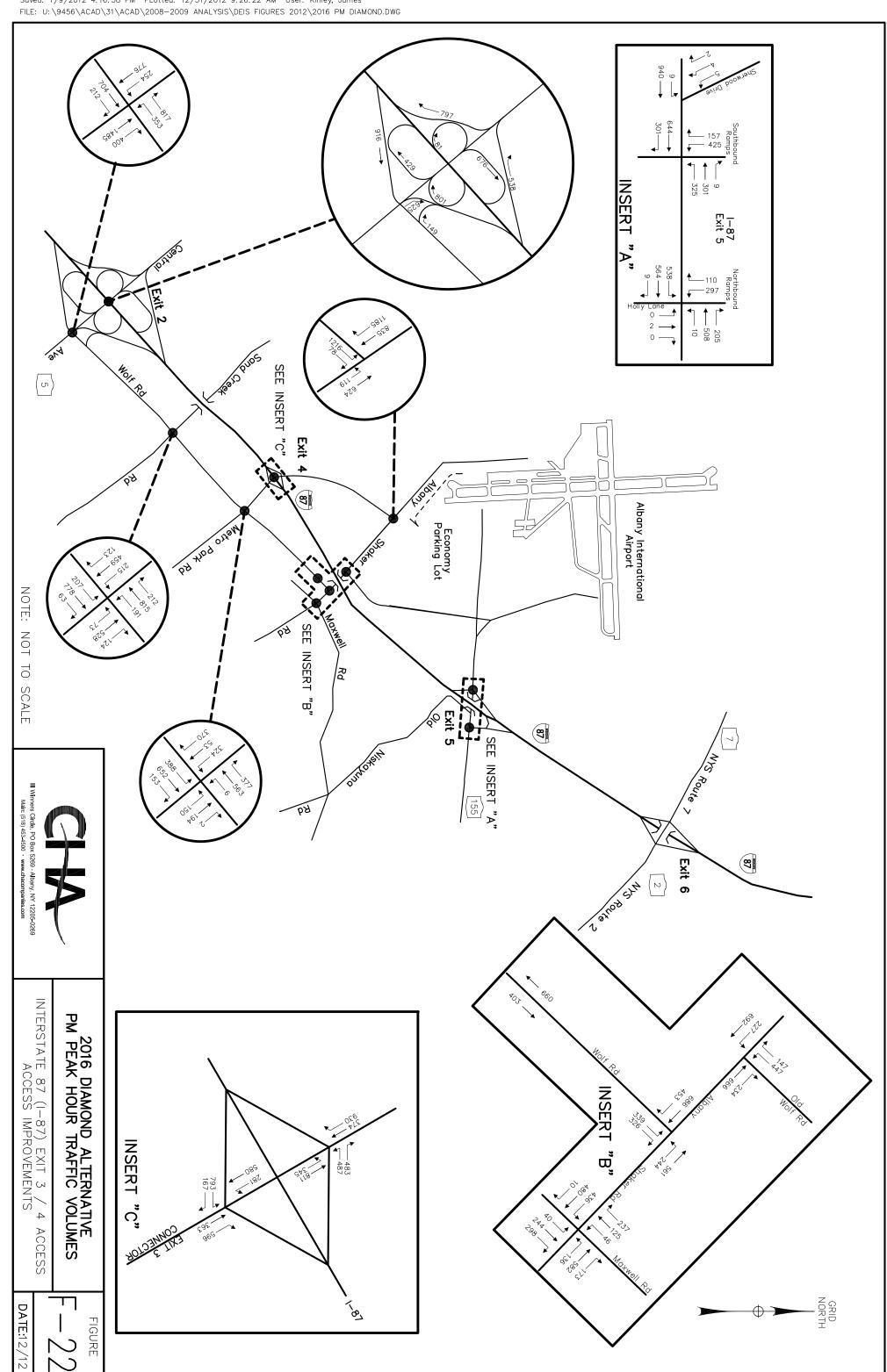
2046 NO-BUILD HIGHWAY PM PEAK HOUR TRAFFIC VOLUMES

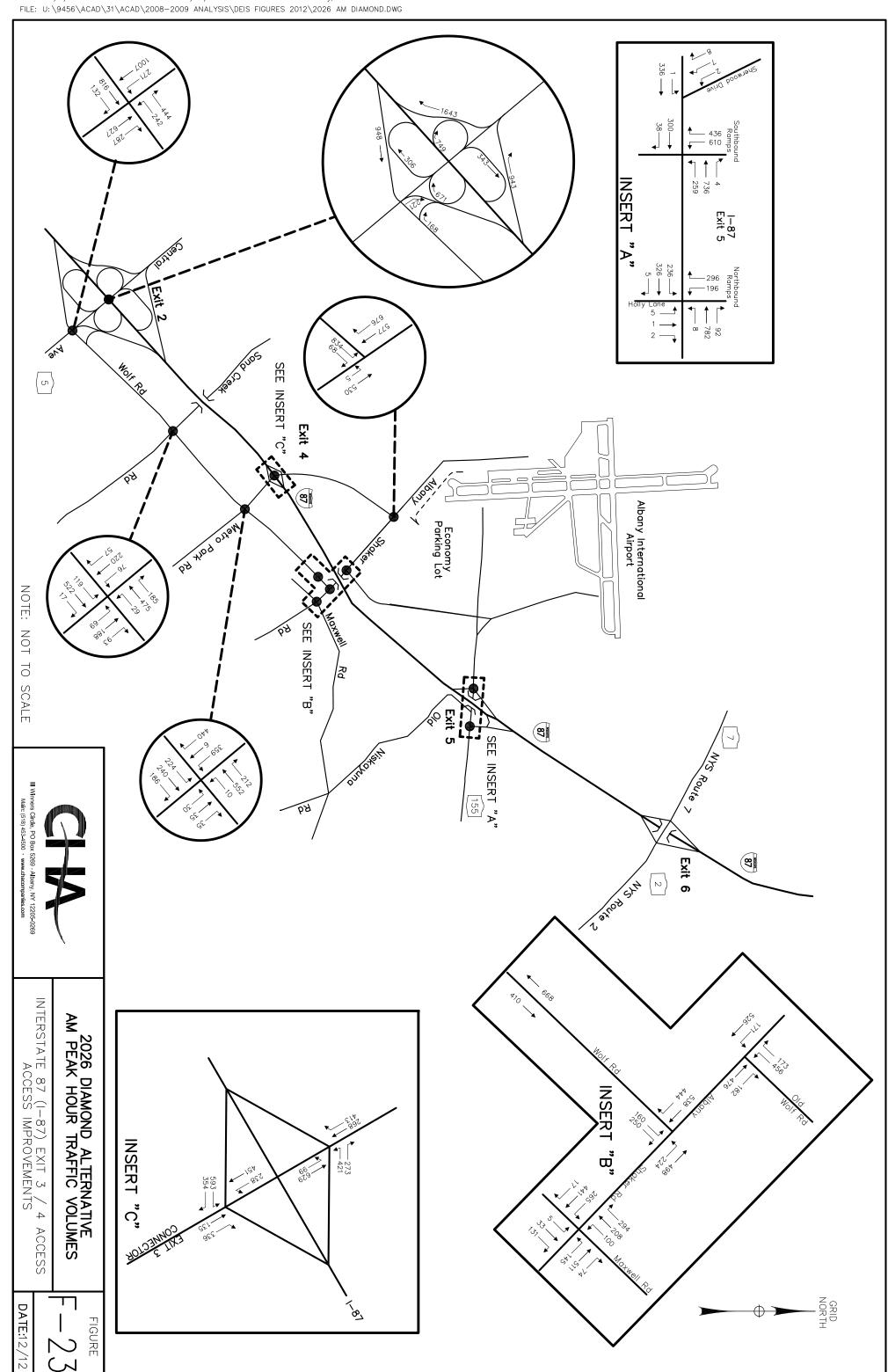
INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

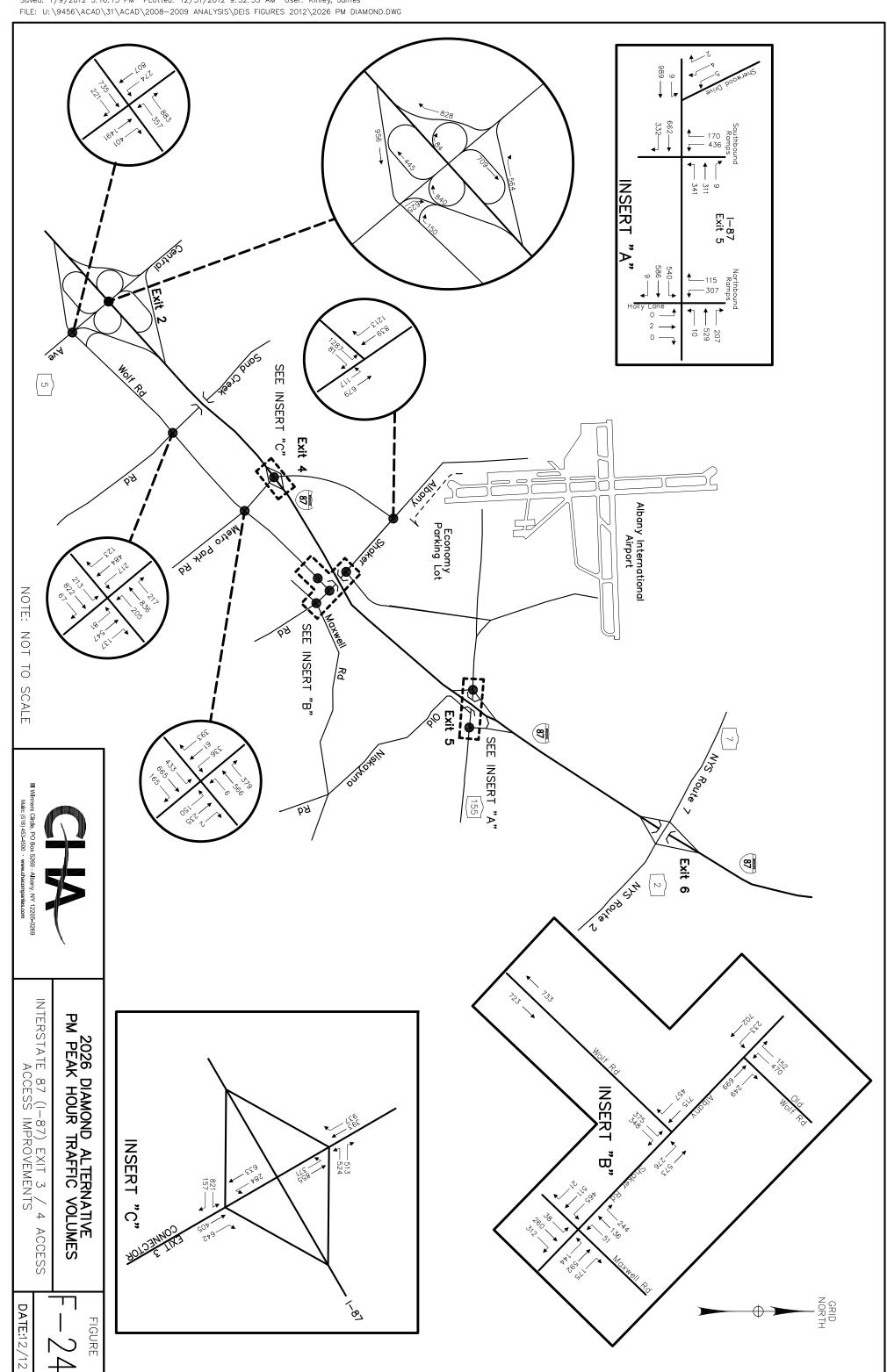
F - 20

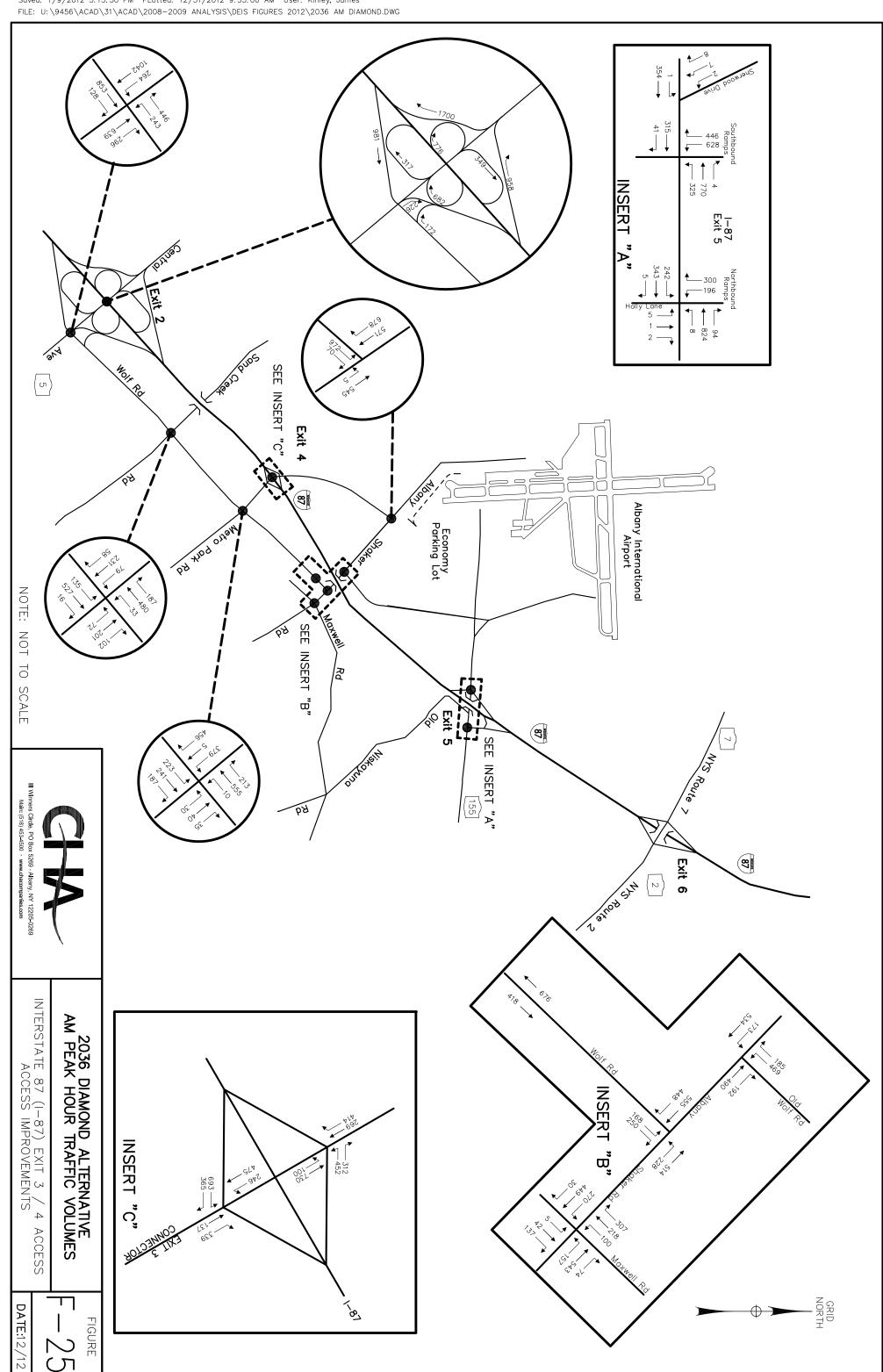
**DATE:** 1/12

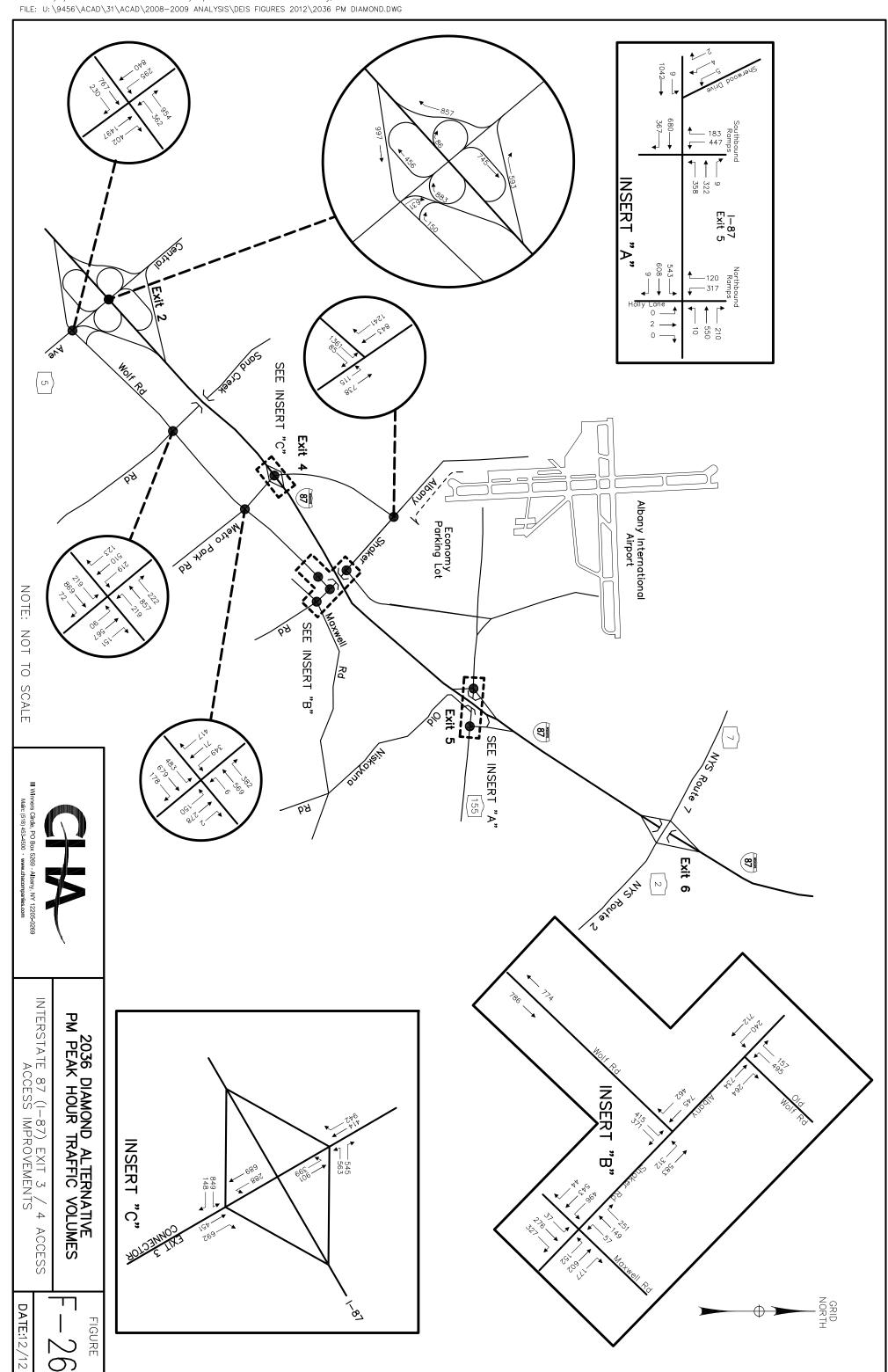


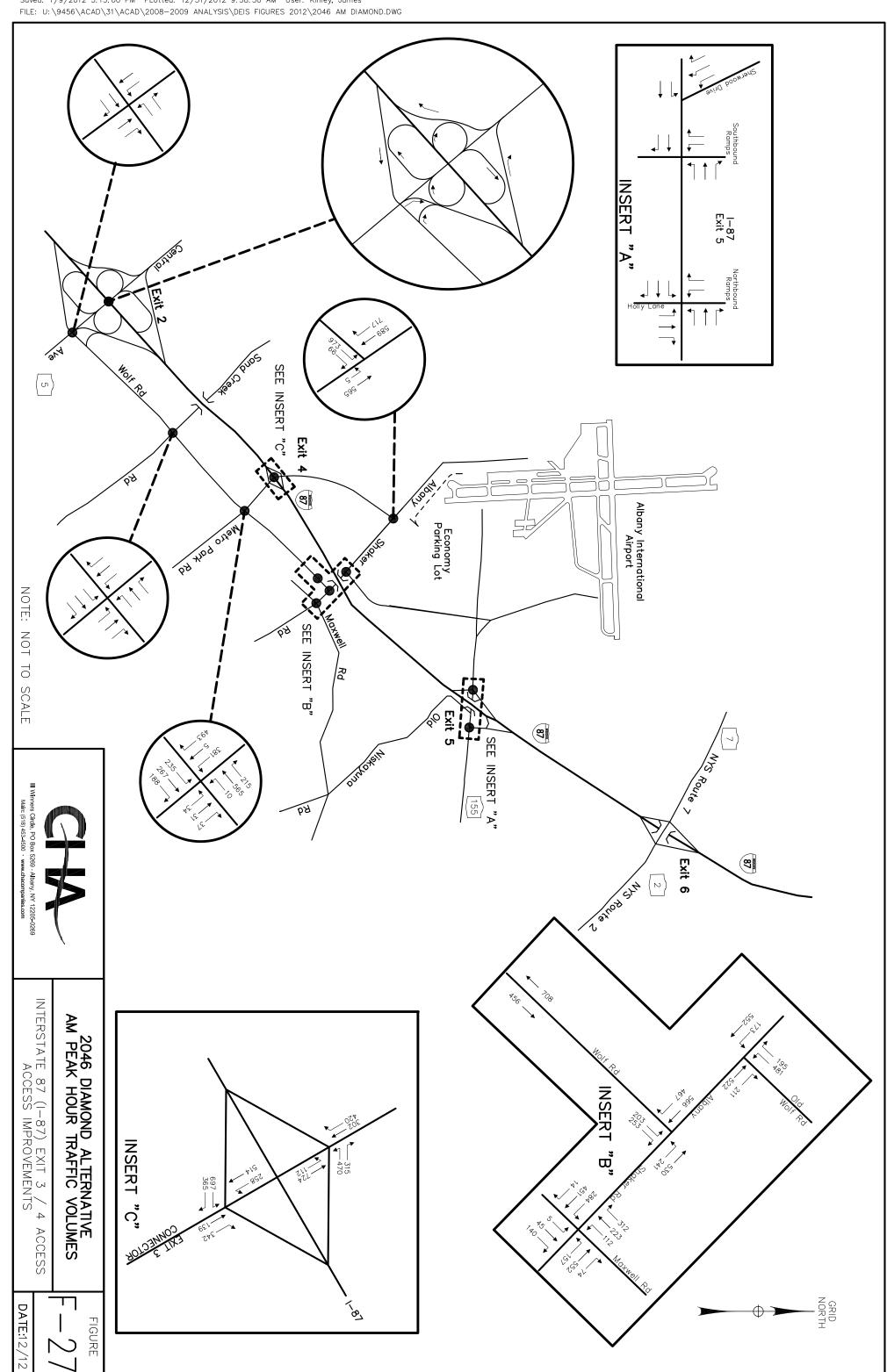


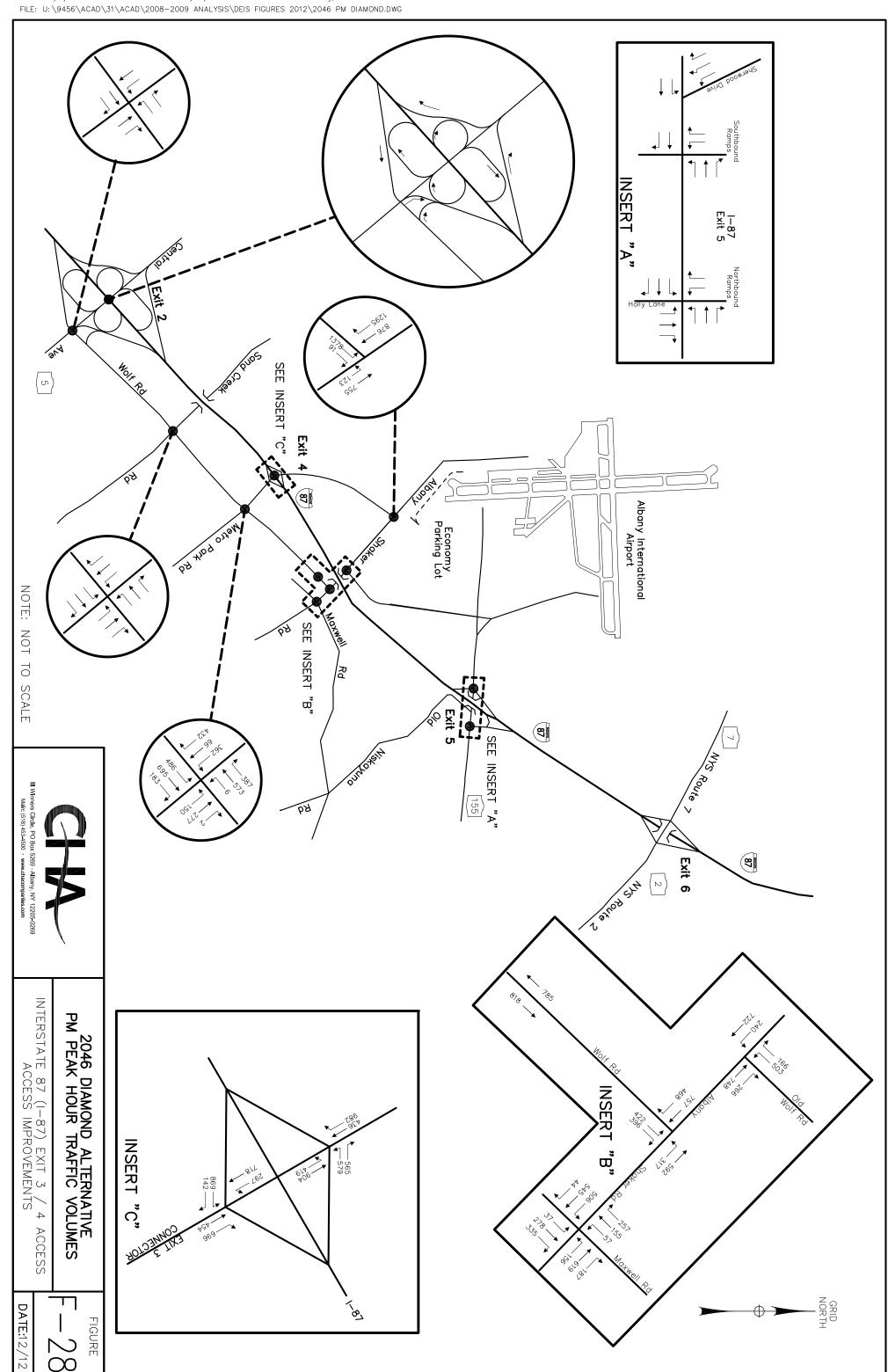


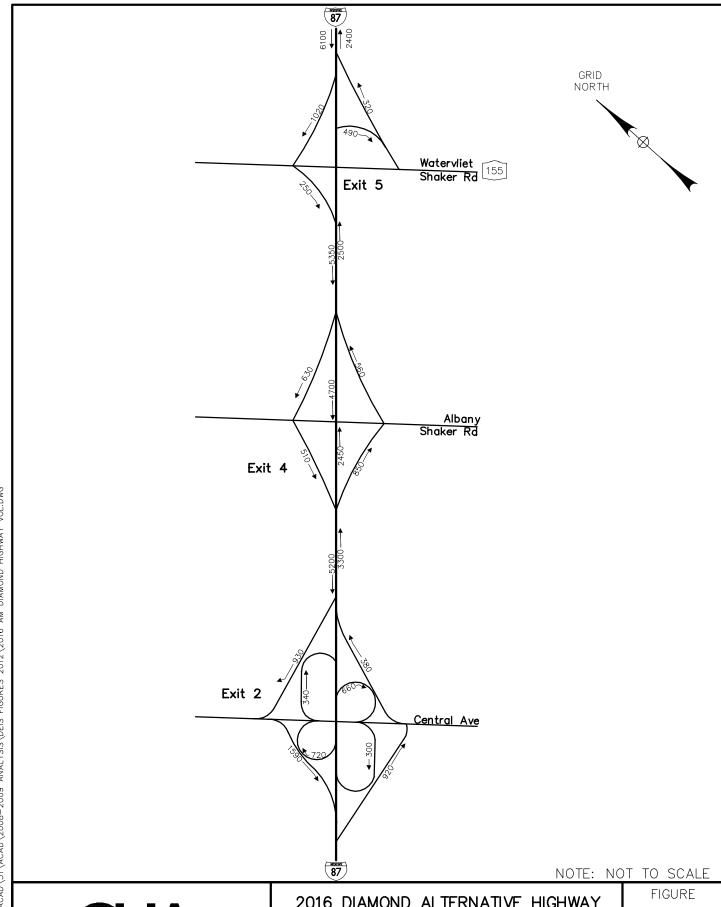










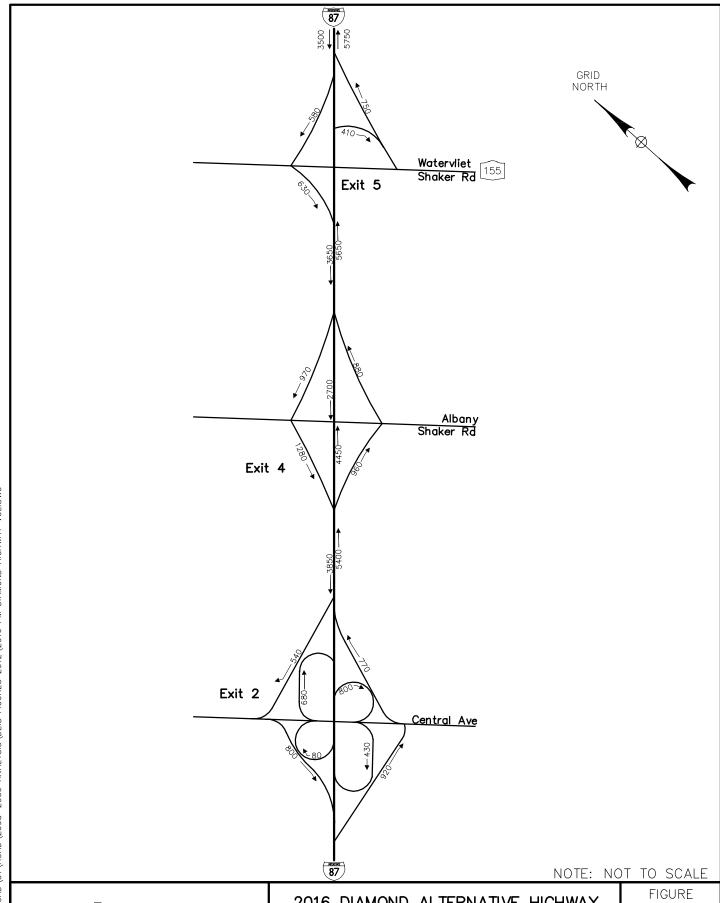




2016 DIAMOND ALTERNATIVE HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

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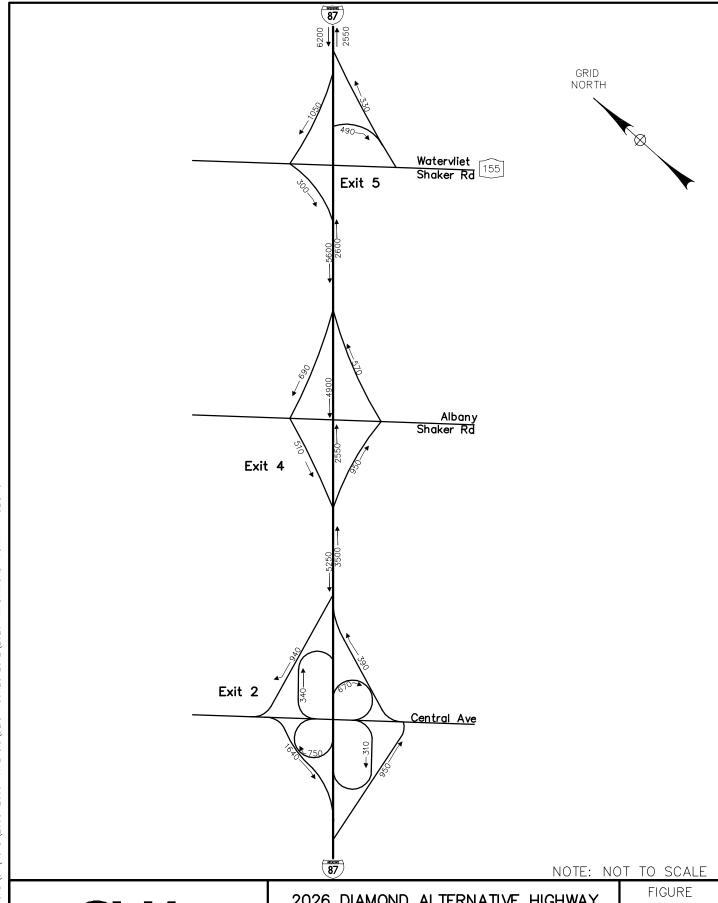




2016 DIAMOND ALTERNATIVE HIGHWAY PM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

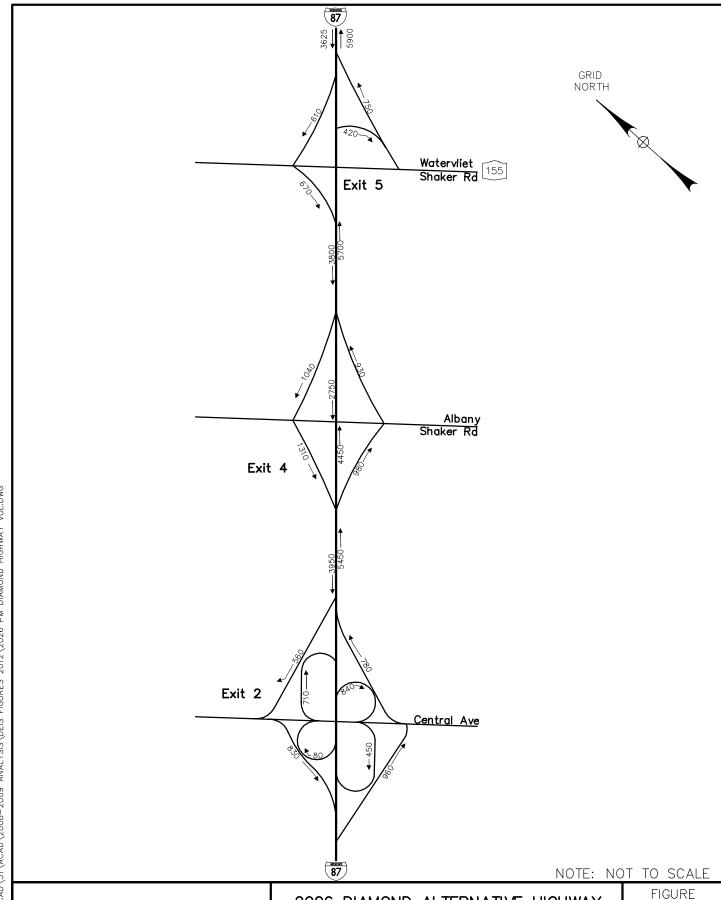
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2026 DIAMOND ALTERNATIVE HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

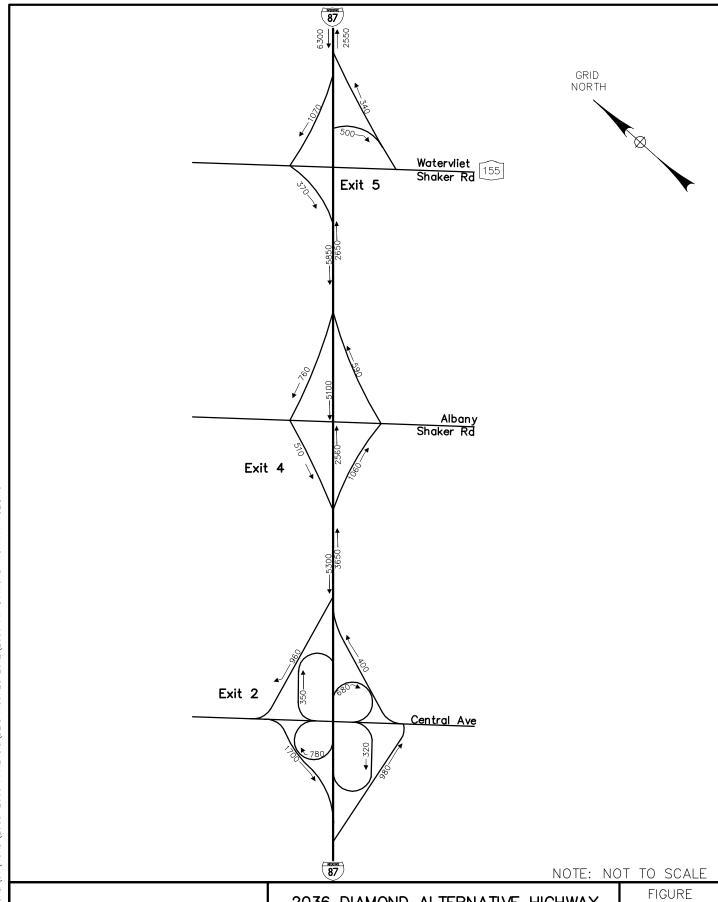
INTERSTATE 87 (I-87) EXIT 3 / 4ACCESS IMPROVÉMENTS





2026 DIAMOND ALTERNATIVE HIGHWAY PM PEAK HOUR TRAFFIC VOLUMES

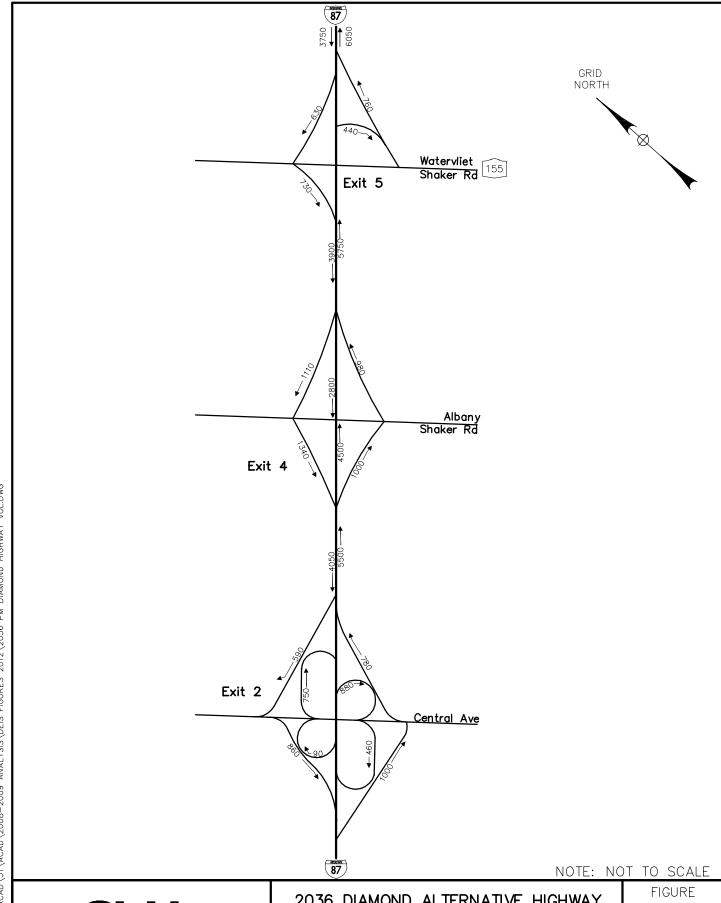
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2036 DIAMOND ALTERNATIVE HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4ACCESS IMPROVÉMENTS

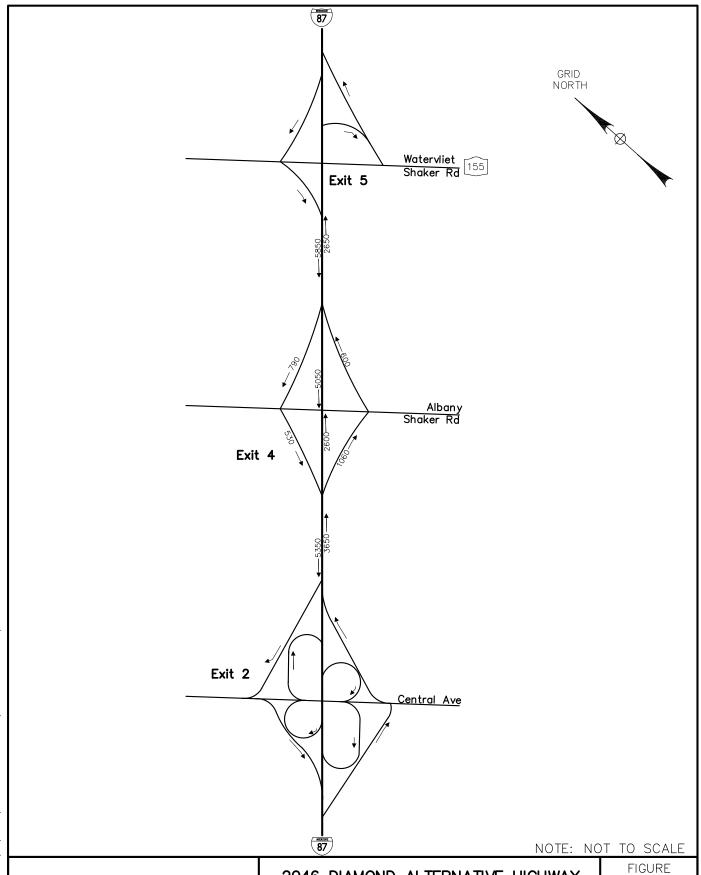




2036 DIAMOND ALTERNATIVE HIGHWAY PM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

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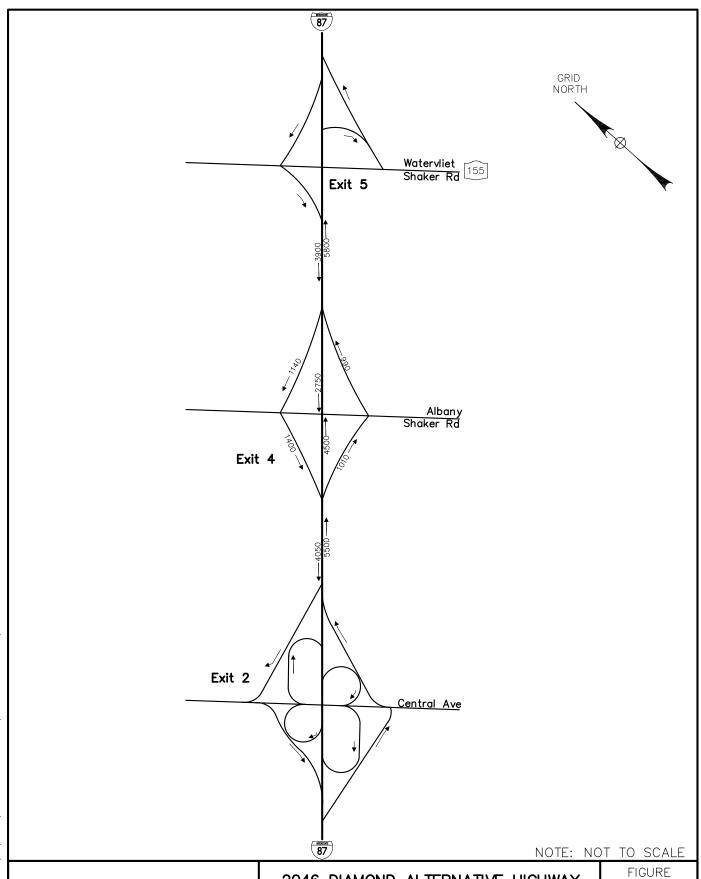


2046 DIAMOND ALTERNATIVE HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

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**DATE:** 12/12



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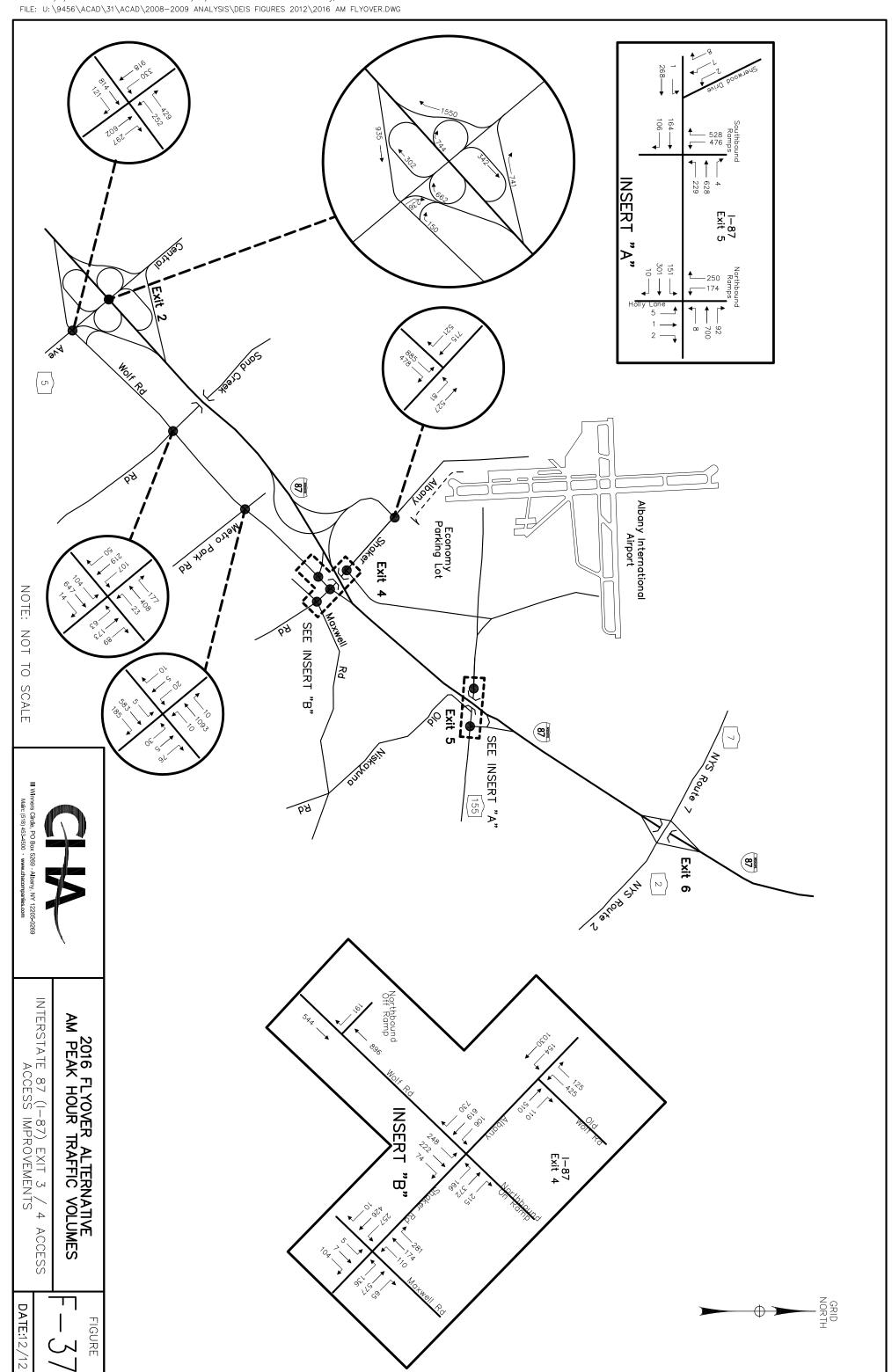
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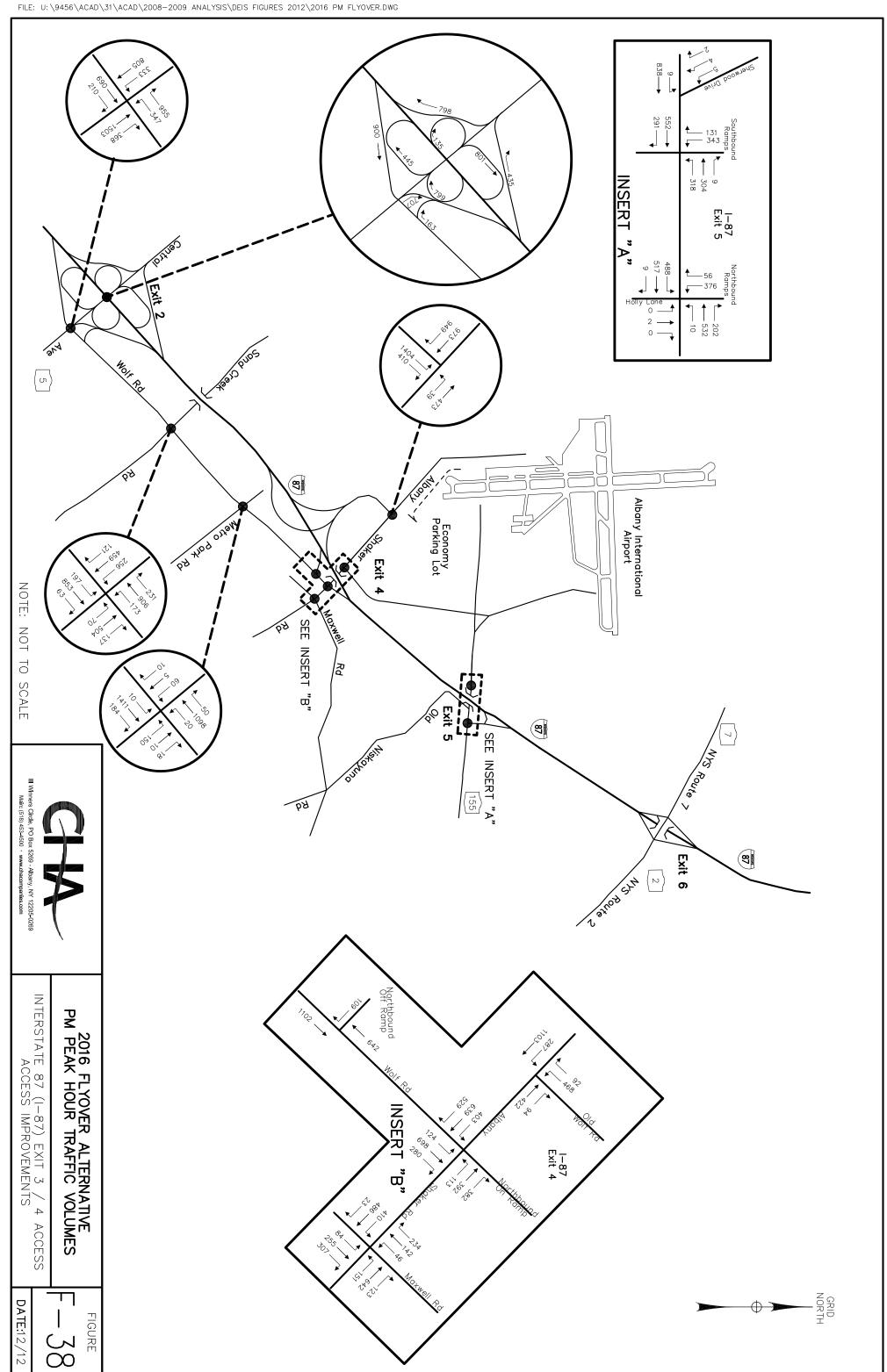
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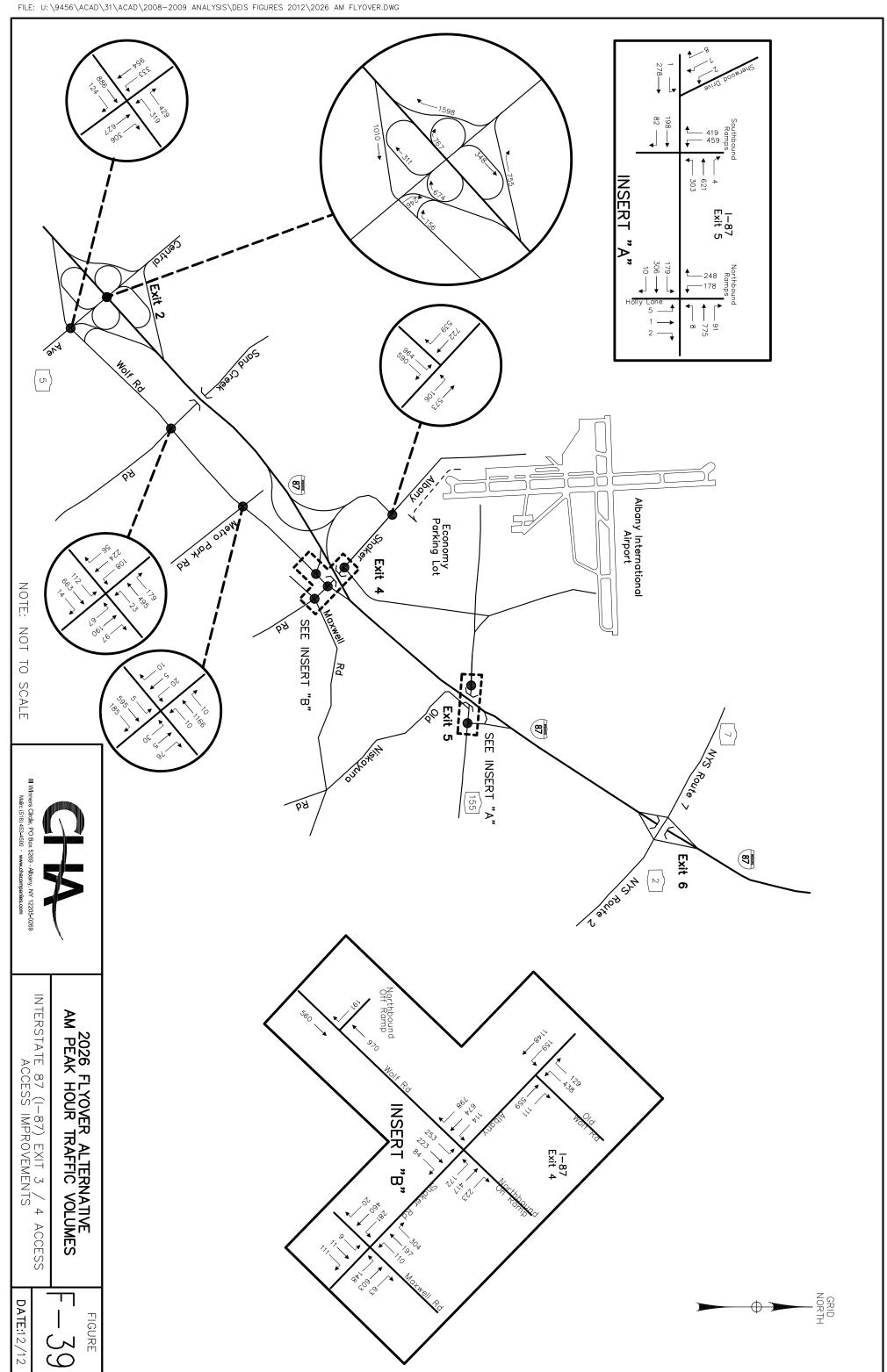
INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS

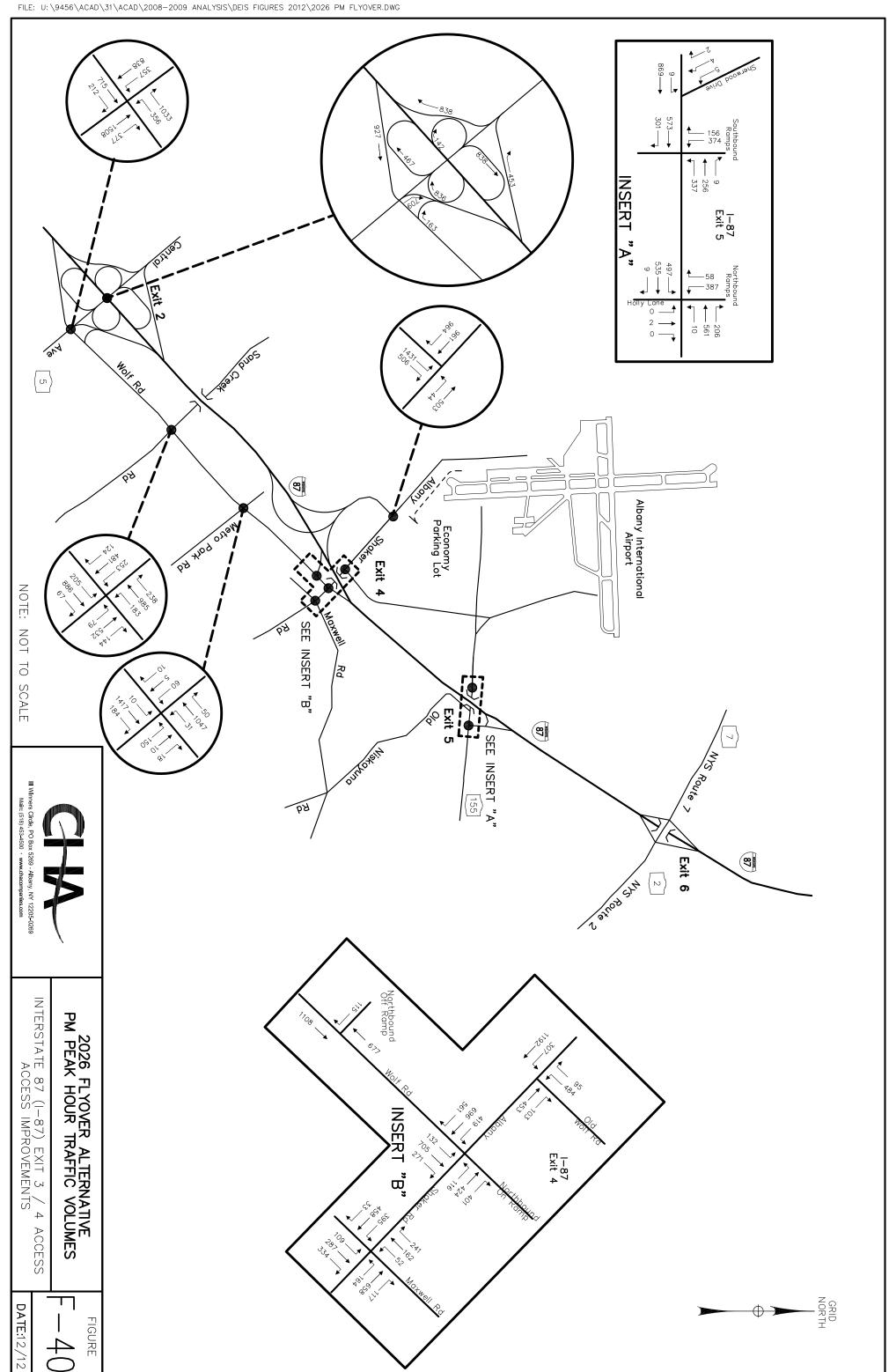
F - 36

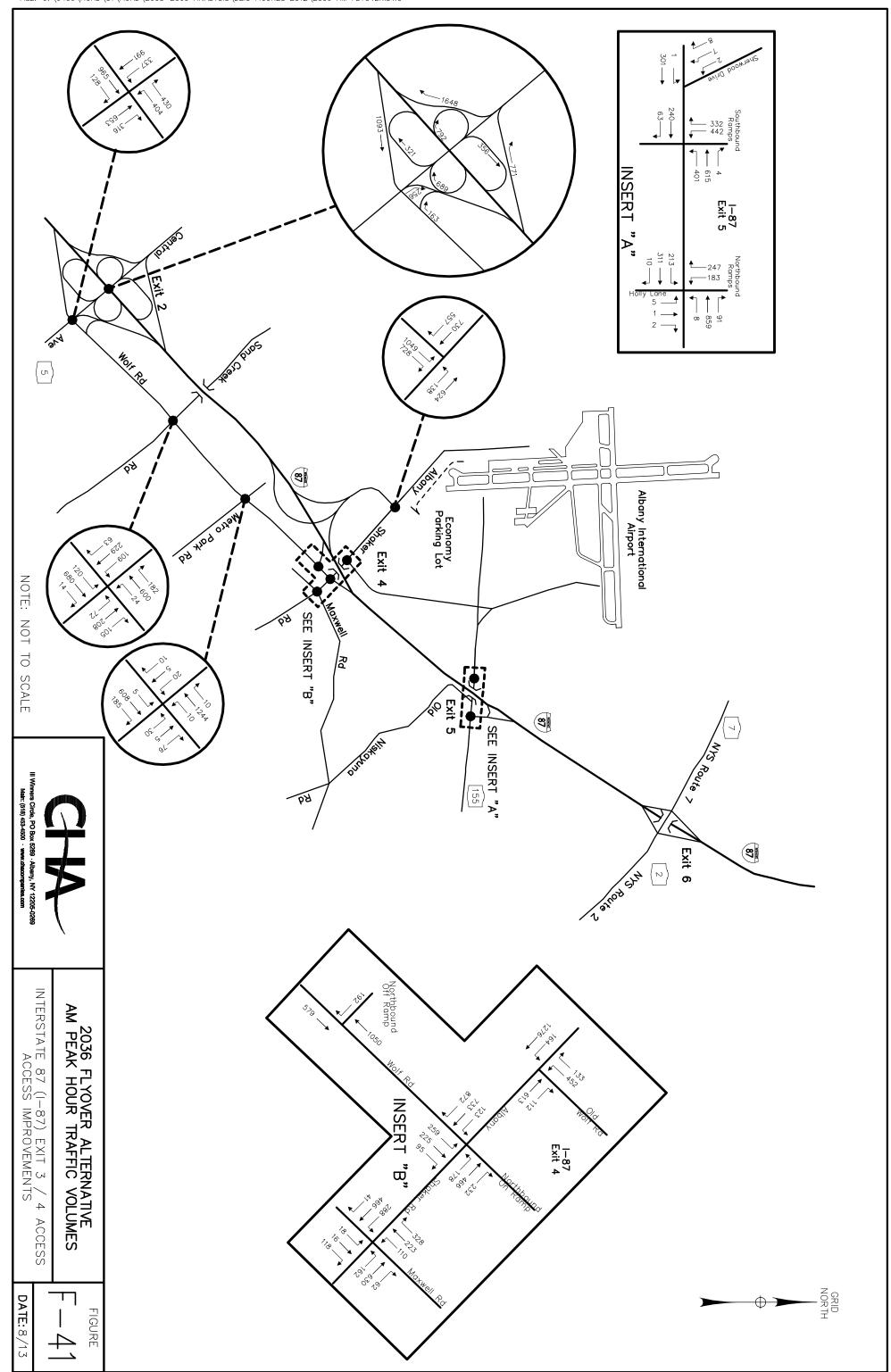
**DATE:** 12/12

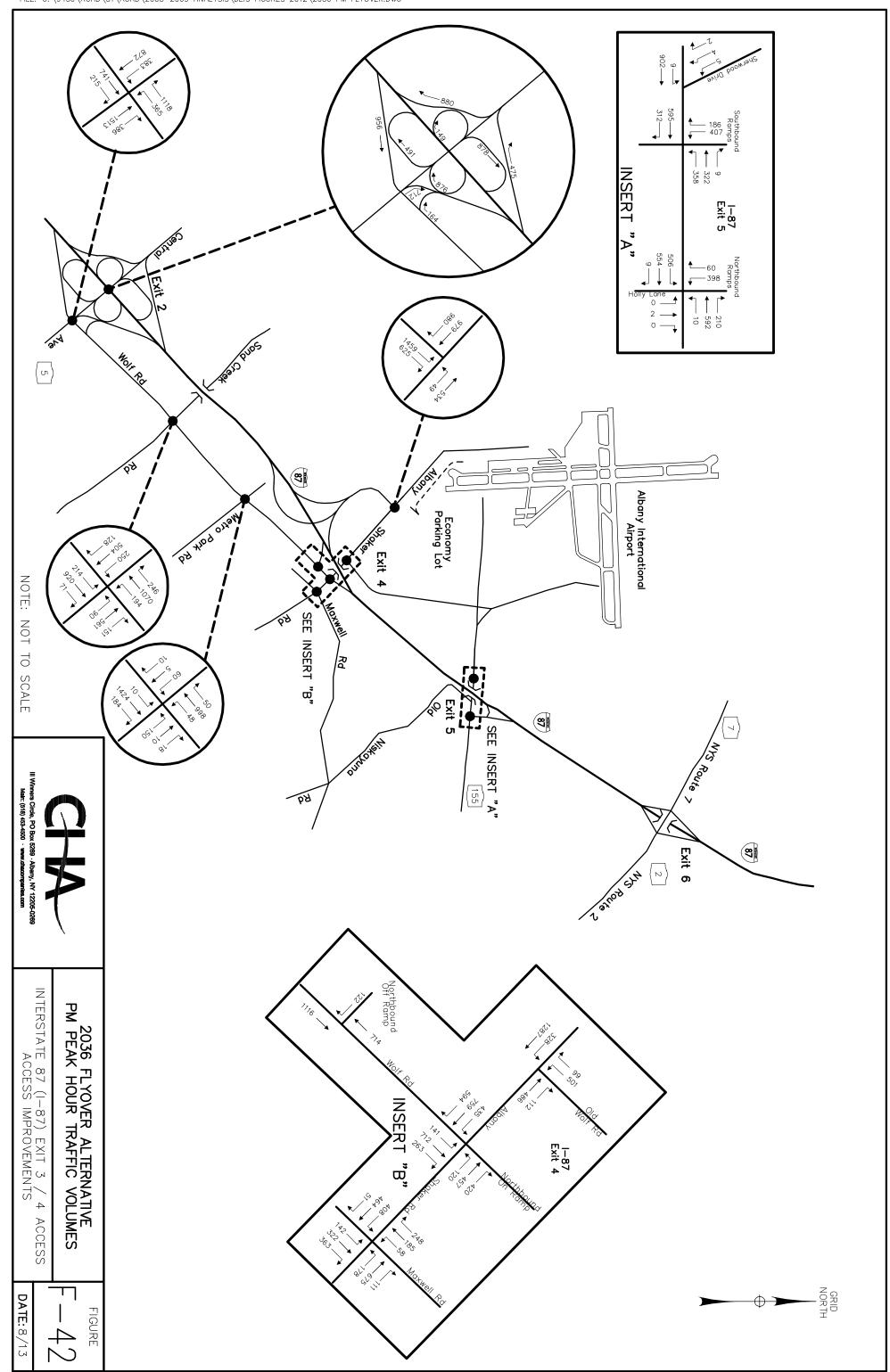


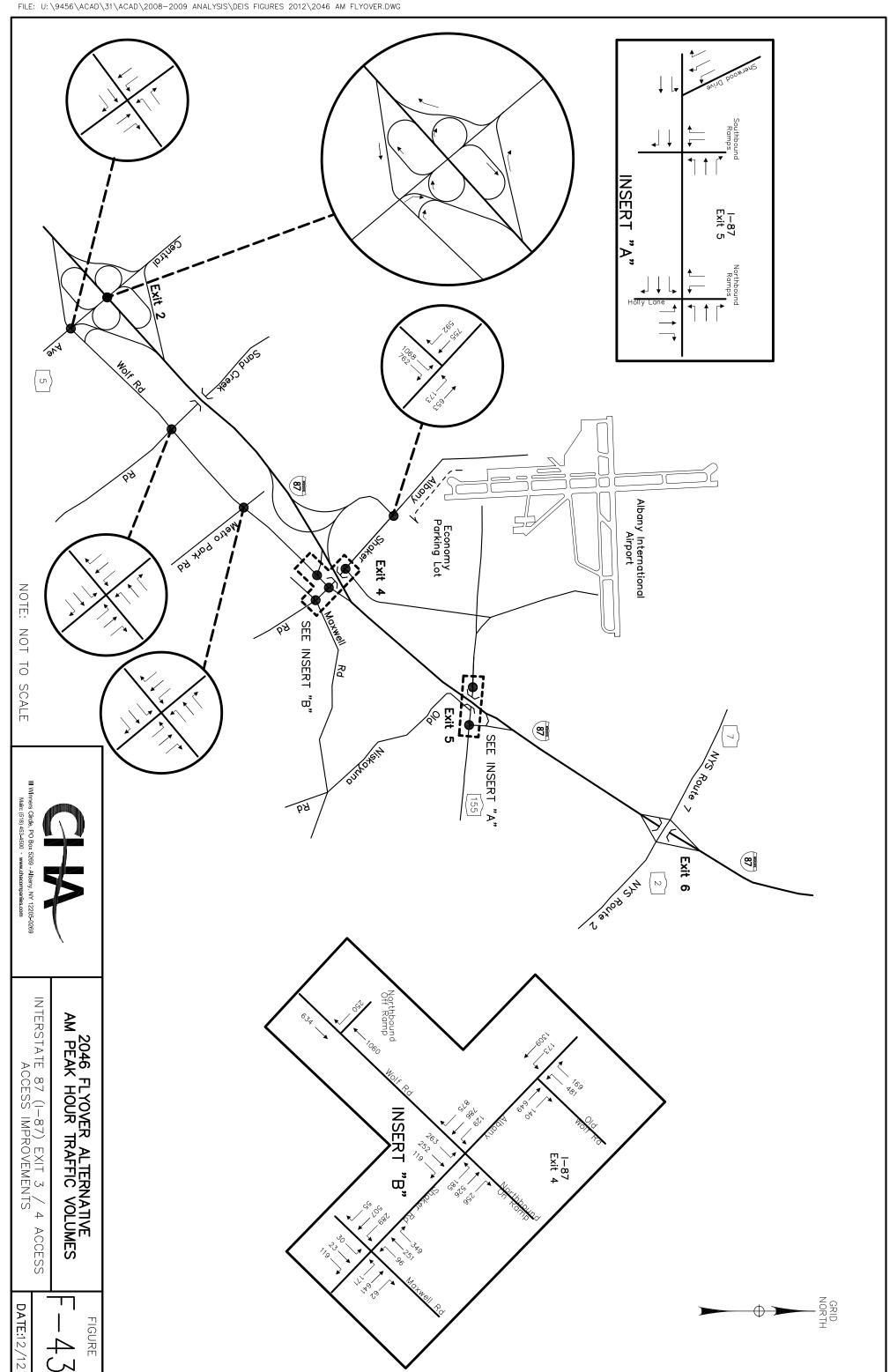


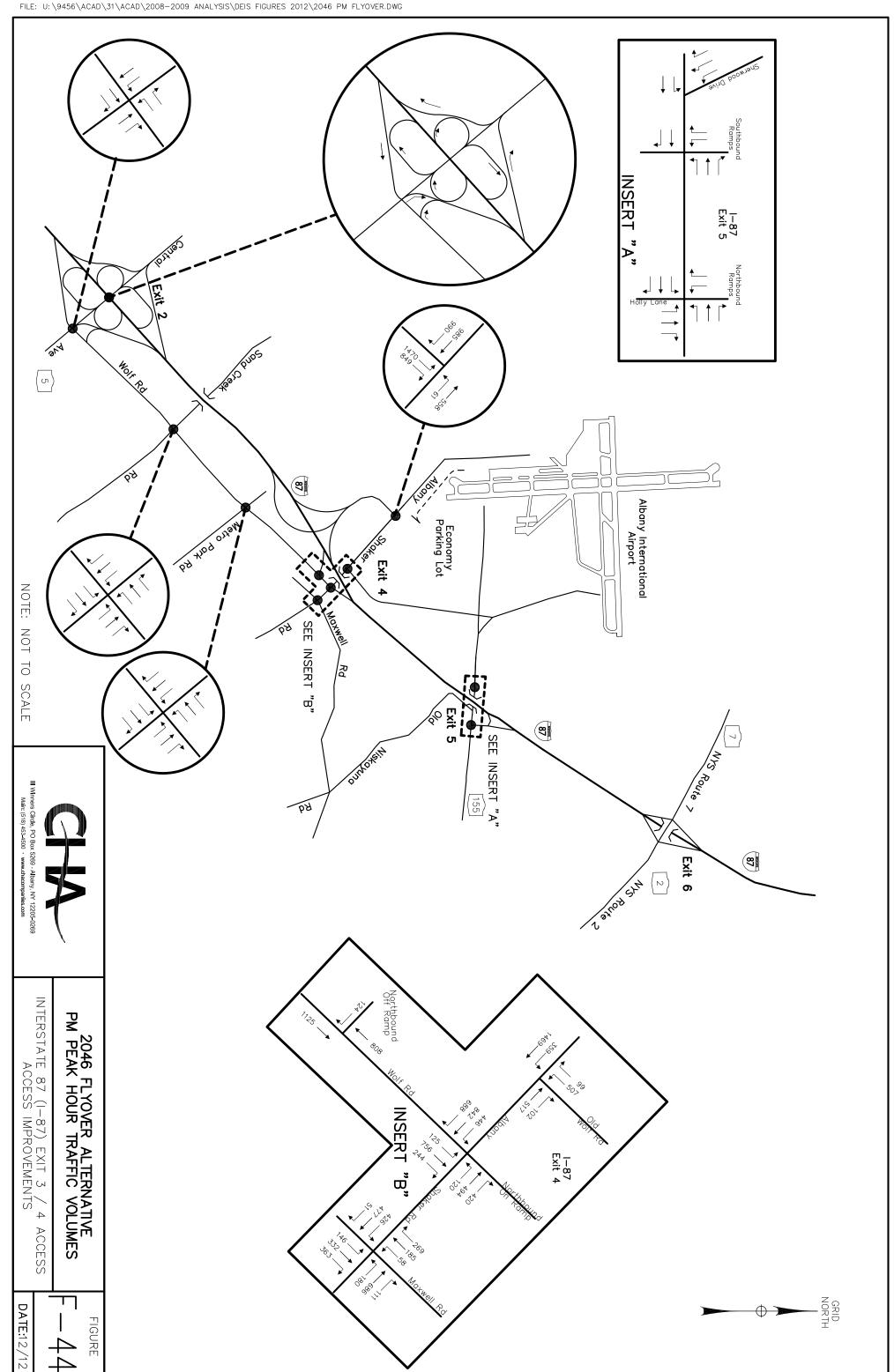


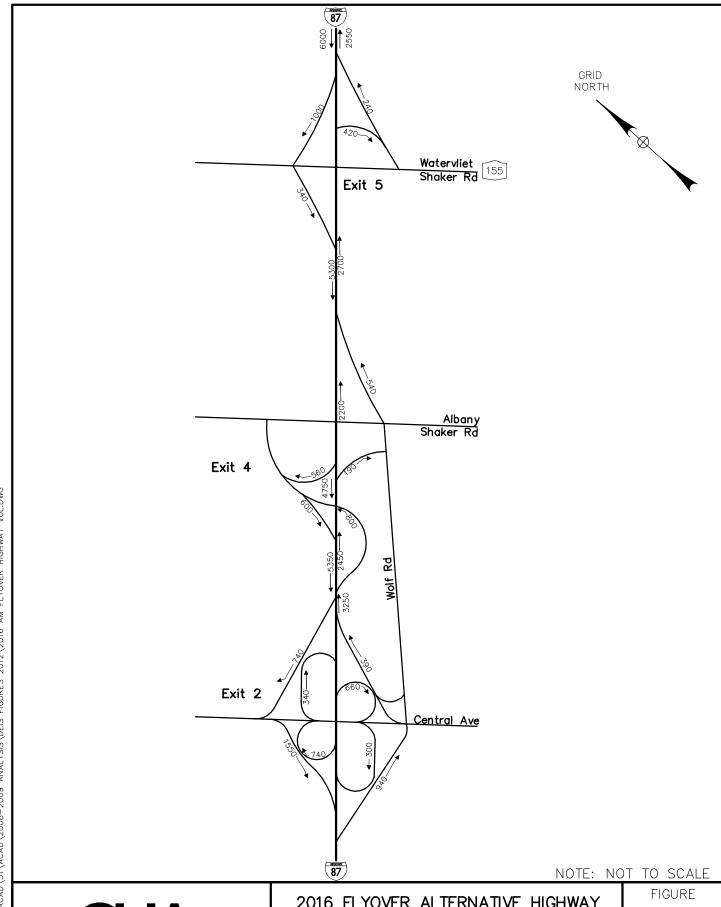










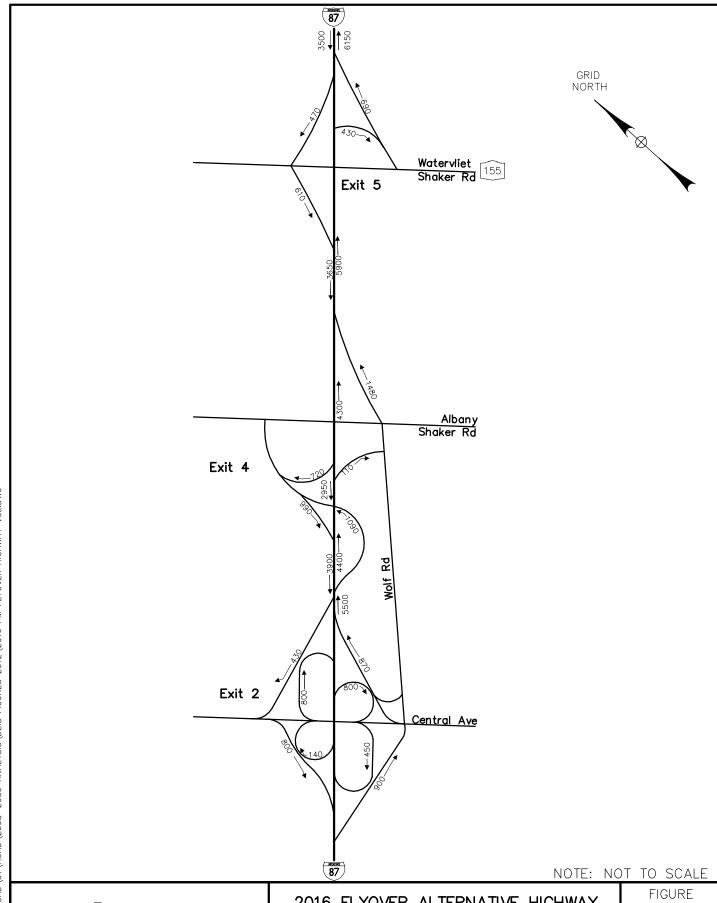




2016 FLYOVER ALTERNATIVE HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

-45

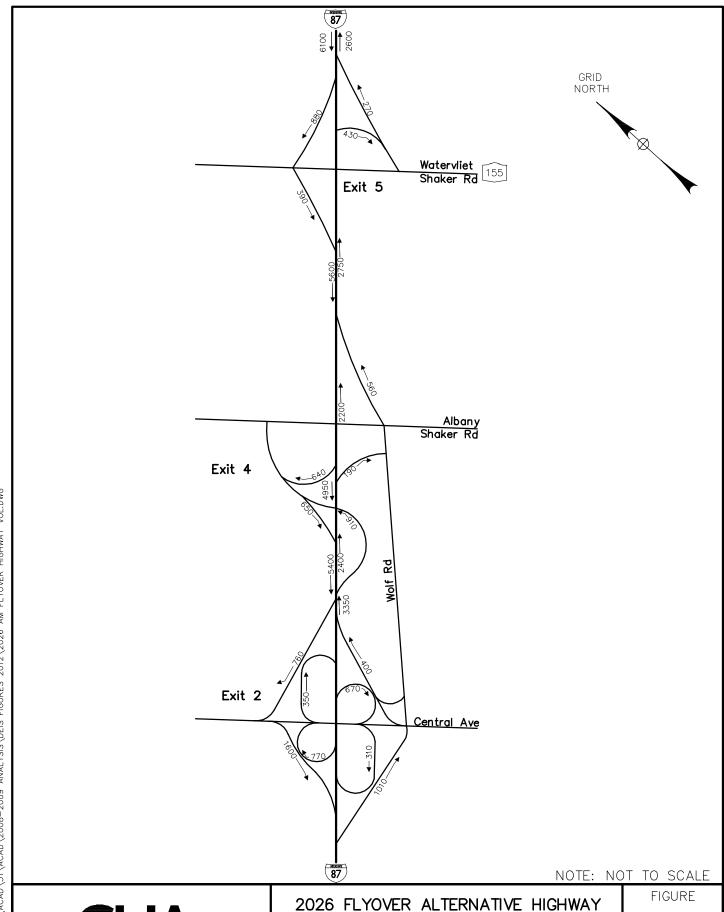




2016 FLYOVER ALTERNATIVE HIGHWAY PM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

-46

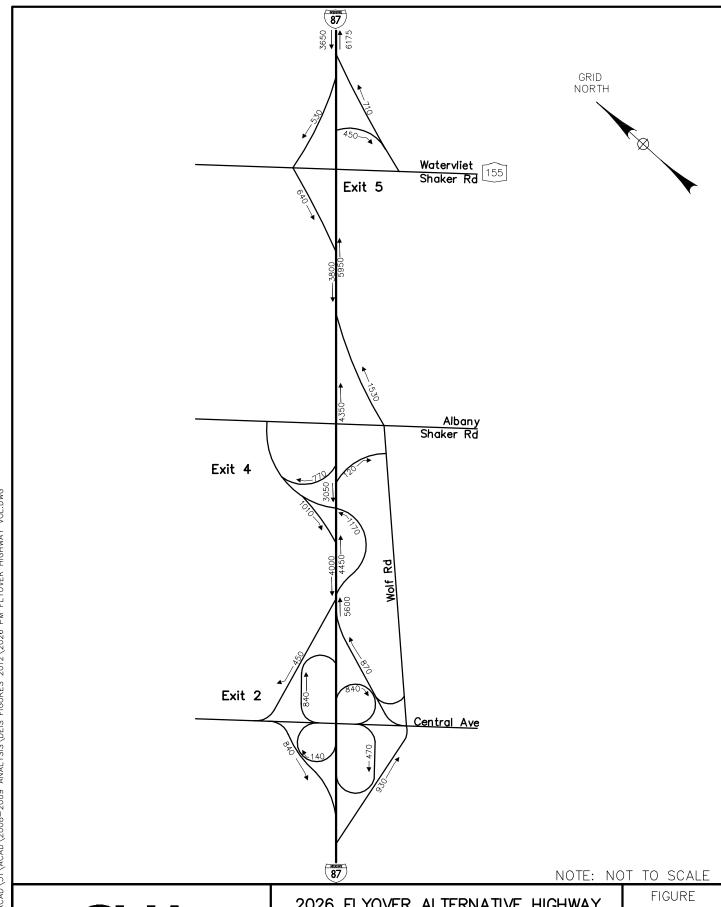




2026 FLYOVER ALTERNATIVE HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

-47

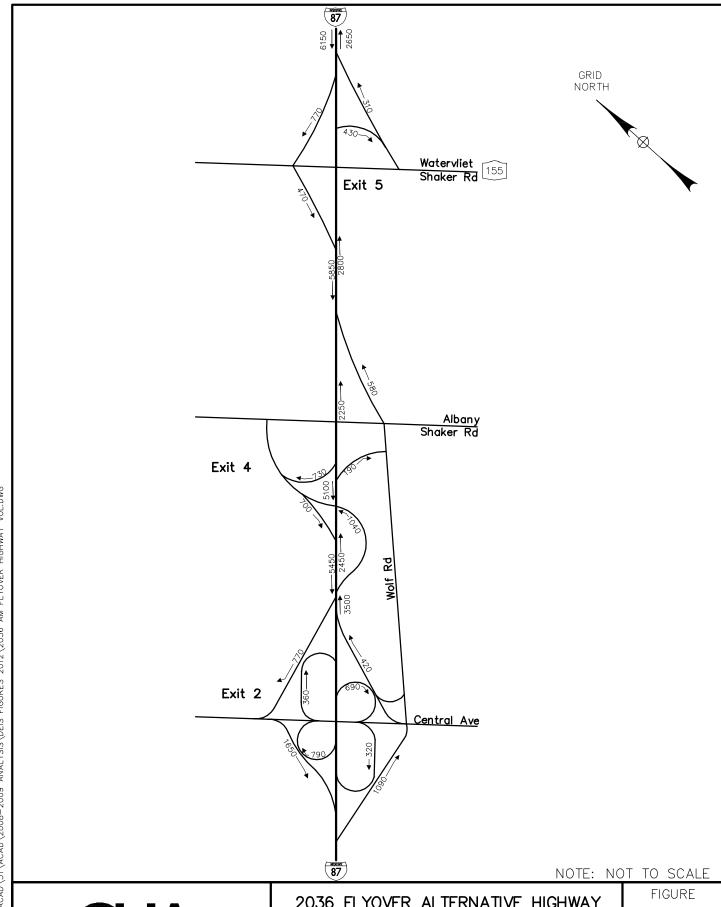




2026 FLYOVER ALTERNATIVE HIGHWAY PM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

-48

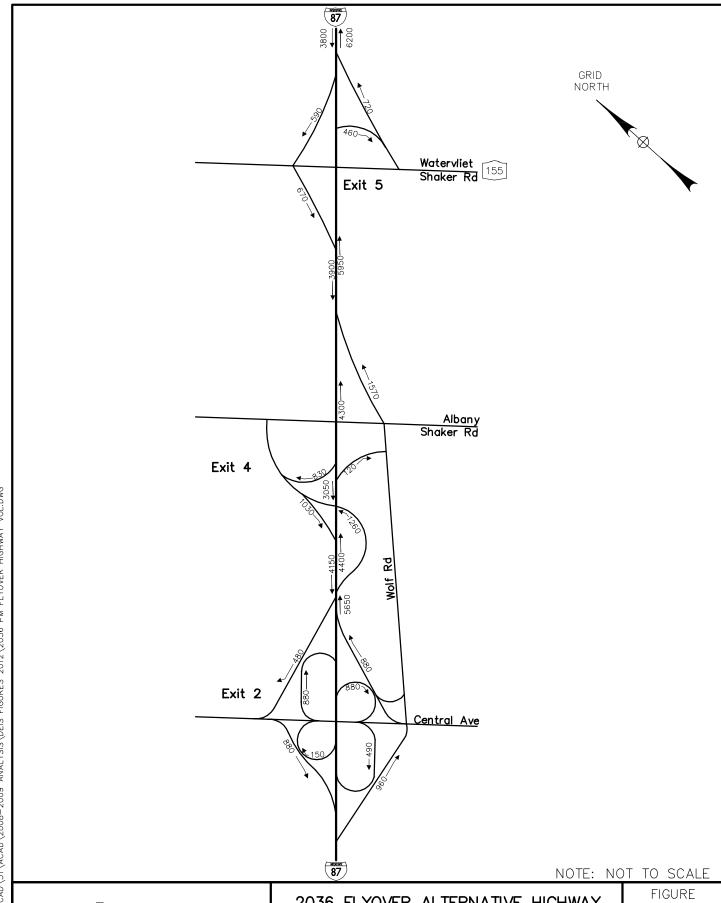




2036 FLYOVER ALTERNATIVE HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

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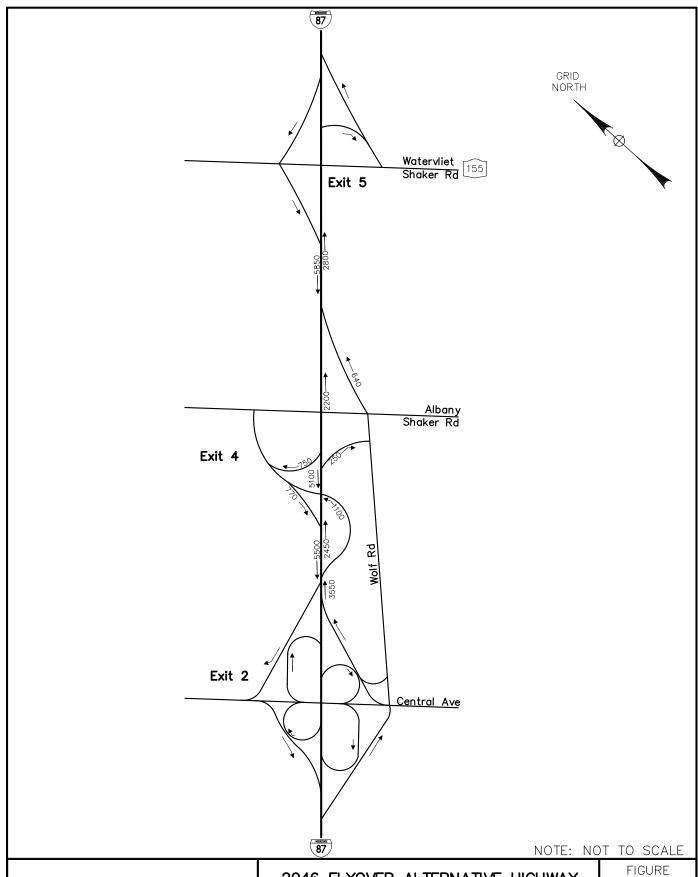




2036 FLYOVER ALTERNATIVE HIGHWAY PM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

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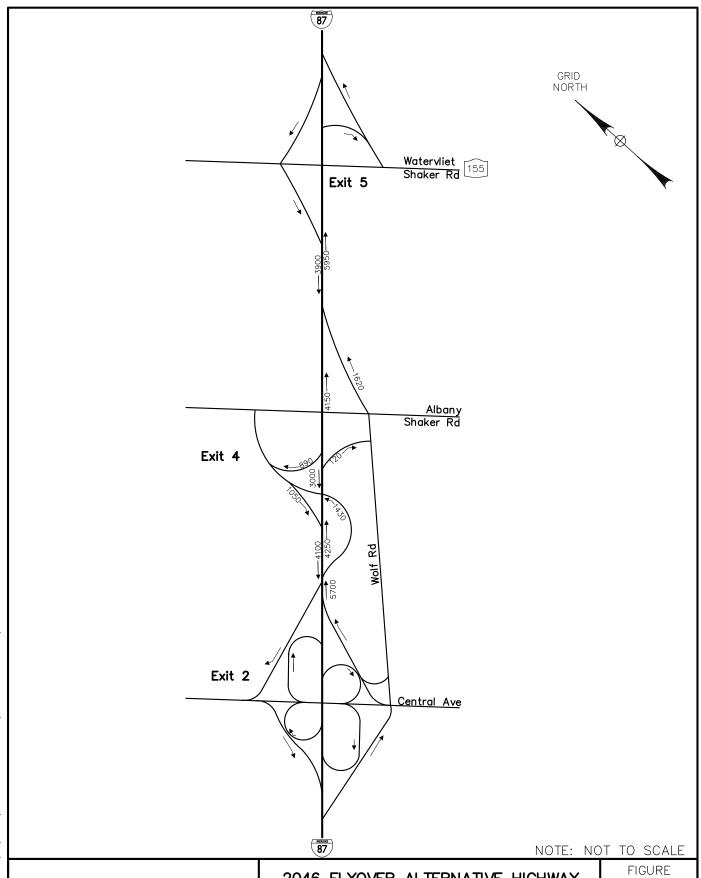




2046 FLYOVER ALTERNATIVE HIGHWAY AM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS

**DATE:** 12/12





2046 FLYOVER ALTERNATIVE HIGHWAY PM PEAK HOUR TRAFFIC VOLUMES

INTERSTATE 87 (I-87) EXIT 3 / 4
ACCESS IMPROVEMENTS

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**DATE:** 12/12

ATTACHMENT B
TRAFFIC COUNT DATA

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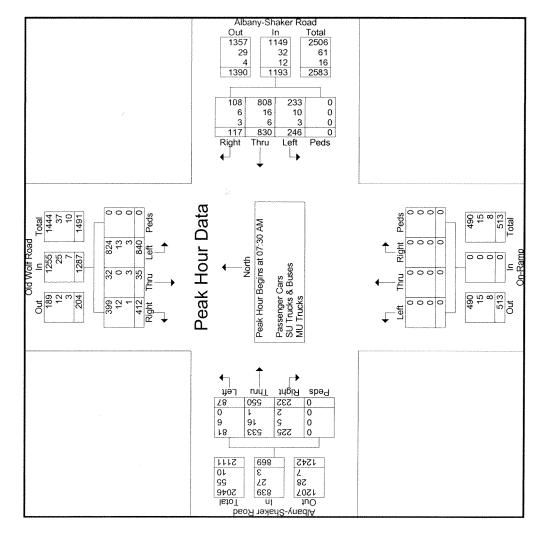
> Old Wolf Road/Albany-Shaker Road Exit 3/Exit 4

AM 7 to 9

File Name: Albany Shaker Road & Old Wolf Road AM

Site Code : 01270901

: 1/27/2009 Start Date : Page No :



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AM 7 to 9

Exit 3/Exit 4 Old Wolf Road/Albany-Shaker Road

File Name: Albany Shaker Road & Old Wolf Road AM Site Code: 01270901 Start Date: 1/27/2009 Page No: 1

|           | Groups Printed- Passenger Cars - SU Trucks & Buses - MU Trucks Old Wolf Road Albany-Shaker Road On-Ramp Albany-Shaker Road   | pu  | Peds App Total Int Total | 0 158    | 200      | 707      |          | 0 769 2929   | 243      | 197      | 235        |          | 0 851 3195 | 1620        |           | 36.6                         |                | 96.2             | F.23              | , c                 | 900 0       | )              |
|-----------|--|---|--------------------------|----------|----------|----------|----------|--|----------|----------|------------|----------|------------|-------------|-----------|------------------------------|----------------|------------------|-------------------|---------------------|-------------|----------------|
|           | Eastbound  | Thru                                      | -                        |          |          |          | 486 86   |  |          |          | 97         | 536 70   |            |             | 16.7      | de de cando primero de canon | 7 89 7         |                  | 27 103            |                     | ) (         |                |
|           | THE POST OF THE PARTY OF THE PA |   | Right                    | gς       | 8 8      | 2 6      | 2 5      | 197  | κχ       | 3 6      | . <u>(</u> | . על     | 245        | 442         | 27.3      | 5 C                          |                | 96.6             | 10                | 23                  | 5           | , ,            |
| Ś         |  |   | App. Total               |          | o C      | · ·      | o c      | 0  | c        | 0 0      | 0 0        | o C      | 0          | C           | ,         | C                            |                | 0                | C                 | 0                   | 0           |                |
| U Truck   | Cars - SU Trucks & Buses - MU Trucks On-Ramp   | nuq                                       | Peds                     |          | 0 0      | o C      | o C      | 0  | c        | · C      | · C        | · C      | 0          | 0           | · C       | o C                          |                | 0                | C                 | 0                   | 0           |                |
| uses - M  |  | Northbound                                | Left                     |          | · C      | · C      | 0 0      | 0  | С        | C        | · C        | · C      | 0          | 0           | · C       | o C                          |                | 0                | 0                 | 0                   | 0           |                |
| cks & Bi  |  | _   | Thru                     |          | - C      |          |          |  | C        | · C      |            |          |            | 0           | · C       |                              | -              | 0                |                   | 0                   |             |                |
| SU True   |  |   | Right                    | <u> </u> |          |          |          |  | -        | _        |            | 0        |            |             | _         | · C                          |                | 0                |                   | 0                   |             |                |
| er Cars - | assenger Cars - SU Tru<br>er Road  |   | App. Total               | 156      | 226      | 296      | 316      | 994  | 278      | 303      | 249        | 225      | 1055       | 2049        |           | 33.5                         |                | 95.9             | 65                | 3.2                 | 20          | •              |
| asseng    |  | pun                                       | Peds                     |          |          |          | 0        | The second secon | 0        |          |            | 0        |            |             | 0.1       |                              |                | 100              | 0                 | 0                   | 0           | •              |
| inted-P   | ny-Shak  | Westbound                                 | Left                     | 33       | 51       | 64       | 56       | 204  | 56       | 70       | 09         | 20       | 236        | 440         | 21.5      | 7.2                          |                | 95.2             | 17                | 3.9                 | 4           | •              |
| oups Pr   | Albaı  |   | Thru                     |          |          |          | 236      |  |          |          |            | 150      | 703        | 1385        |           | 22.6                         |                | 96.7             | 37                | 2.7                 | 6           | •              |
| ້ໍວັ      |  |   | Right                    | 21       | 24       | 37       | 24       | 106  | 23       | 33       | 35         | 25       | 116        |             | 10.8      | 3.6                          |                | 91.9             | 7                 | 2                   | 7           |                |
|           |  |   | Peds   App. Total        | 232      | 273      | 309      | 352      | 1166   | 289      | 337      | 300        | 363      | 1289       | 2455        |           | 40.1                         |                | 97.6             | 49                | 2                   | 1           | •              |
|           | oad  | nd  | Peds                     | 0        | 0        | 0        | 0        | 0  | 0        | 0        | ~          | 0        | -          | -           | 0         | 0                            |                | 100              | 0                 | 0                   | 0           | <              |
|           | I Wolf R   | Southbound                                | Left                     | 138      | 187      | 198      | 219      | 742  | 194      | 229      | 212        | 272      | 907        | 1649        | 67.2      | 26.9                         |                | 98.2             | 24                | 1.5                 | 9           | <              |
|           | ŏ  | So  | Thru                     | 11       | ၑ        | 7        | 12       | 36   | თ        | 7        | 17         | 10       | 37         | 73          | က         | 1.2                          |                | 83               | 4                 | 5,5                 | 4           | U              |
|           |  | A. C. | Right                    | 83       | 80       | 104      | 121      | 388  | 86       | 101      | 9/         | 8        | 344        | 732         | 29.8      | 12                           |                | 97               | 21                | 2.9                 | <del></del> | ć              |
|           |  | ***************************************   | Start Time               | 07:00 AM | 07:15 AM | 07:30 AM | 07:45 AM | Total  | 08:00 AM | 08:15 AM | 08:30 AM   | 08:45 AM | Total      | Grand Total | Approch % | Total %                      | Passenger Cars | % Passenger Cars | SU Trucks & Buses | % SU Trucks & Buses | MU Trucks   | 0/ W/ Tresolvo |

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File Name: Albany Shaker Road & Old Wolf Road AM

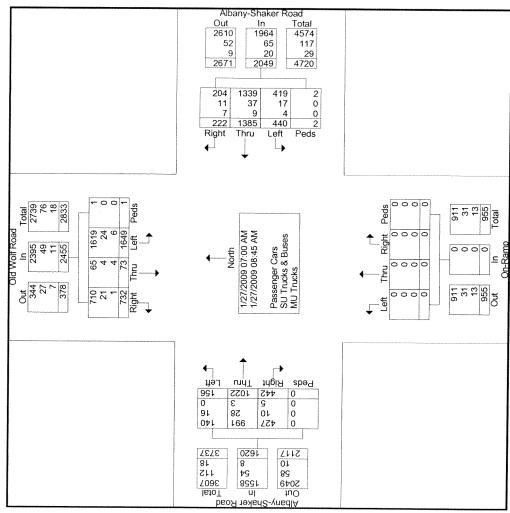
: 1/27/2009 : 2

Start Date: Page No

Site Code : 01270901

Exit 3/Exit 4 Old Wolf Road/Albany-Shaker Road AM

7 to 9



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Exit 3/Exit 4 Old Wolf Road/Albany-Shaker Road

File Name: Albany Shaker Road & Old Wolf Road AM Site Code: 01270901 Start Date: 1/27/2009 Page No: 3

7 to 9 AM

|  |             | old       | Old Wolf Road      | oad     |                      |       | Albany             | ny-Shaker Road | · Road |            |       | 0    | On-Ramp    |         |            |       | Albany   | Albany-Shaker Road   | Road |            |            |
|--|-------------|-----------|--------------------|---------|----------------------|-------|--------------------|----------------|--------|------------|-------|------|------------|---------|------------|-------|----------|--|------|------------|------------|
|  |             | ŭ         | Southbound         | nd      |                      |       | ≶                  | /estbound      | ō      |            |       | Š    | Northbound | و       |            |       | Еa       | Eastbound  | р    |            |            |
| Start Time   | Right       | Thru      | Left               | Peds    | Left Peds App. Total | Right | Thru               | Left           | Peds A | App. Total | Right | Thru | Left       | Peds Ap | App. Total | Right | Thra     | Left   | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | sis From C  | 7:00 AM   | to 08:45           | AM - Pe | ak 1 of 1            |       |                    |                |        |            |       | -    | -          |         | 7          |       |          | The state of the s |      |            |            |
| Peak Hour for Entire Intersection Begins at 07:30 AM       | tire Inters | ection Be | gins at 0          | 7:30 AM |                      |       | 4                  |                |        |            |       |      |            |         |            |       |          |  |      |            |            |
| 07:30 AM   | 104         | 7         | 198                | 0       | 309                  | 37    | 5                  | T<br>e         |        |            |       |      |            |         |            | 62    | <u>r</u> | 0  |      |            |            |
| 07:45 AM   | 121         | 12        | 219                | 0       | 352                  | 24    | 236                | 26             | 0      | 316        | 0     | 0    | 0          | 0       | 0          | 51    | 135      | 28   | 0    | 214        | 882        |
| 08:00 AM   | 98          | 6         | 194                | 0       | 289                  | 23    | 199                | 26             | 0      | 278        | 0     | 0    | 0          | 0       | 0          | 28    | 161      | 24   | 0    | 243        | 810        |
| 08:15 AM   | 101         | 7         | 229                | 0       | 337                  | 33    | 200                | 2              | 0      | 303        | 0     | 0    | 0          | 0       | 0          | 61    | 121      | 72   | 0    | 197        | 837        |
| Total Volume   | 412         | 32        | 840                | 0       | 1287                 | 117   | 830                | 246            | 0      | 1193       | 0     | 0    | 0          | 0       | 0          | 232   | 550      | 87   | 0    | 869        | 3349       |
| % App. Total   | 32          | 2.7       | 65.3               | 0       |                      | 9.8   | 9.69               | 20.6           | 0      |            | 0     | 0    | 0          | 0       |            | 26.7  | 63.3     | 10   | 0    |            |            |
| 보  | .851        | .729      | .917               | 000     | .914                 | .791  | 879                | .879           | 000.   | .944       | 000.  | 000  | 000        | 000     | 000        | .935  | .854     | 777.   | 000  | 894        | 946        |
| Passenger Cars   | 399         | 32        | 824                | 0       | 1255                 | 108   | 808                | 233            | 0      | 1149       | 0     | 0    | 0          | 0       | 0          | 225   | 533      | 81   | 0    | 839        | 3243       |
| % Passenger Cars   | 96.8        | 91.4      | 98.1               | 0       | 97.5                 | 92.3  | 97.3               | 94.7           | 0      | 96.3       | 0     | 0    | 0          | 0       | 0          | 97.0  | 96.9     | 93.1   | 0    | 96.5       | 96.8       |
| SU Trucks & Buses  | 12          | 0         | 13                 | 0       | 25                   | 9     | 16                 | 10             | 0      | 32         | 0     | 0    | 0          | 0       | 0          | 2     | 16       | 9  | 0    | 27         | 84         |
| % SU Trucks & Buses  | 5.9         | 0         | <del>ر</del><br>تن | 0       | 0.1                  | 5.1   | <del>ر</del><br>9. | 4.1            | 0      | 2.7        | 0     | 0    | 0          | 0       | 0          | 2.2   | 2.9      | 6.9  | 0    | 3.1        | 2.5        |
| MU Trucks  | _           | က         | က                  | 0       | 7                    | က     | 9                  | က              | 0      | 12         | 0     | 0    | 0          | 0       | 0          | 7     | -        | 0  | 0    | m          | 22         |
| % MU Trucks  | 0.5         | 8.6       | 0.4                | 0       | 0.5                  | 2.6   | 0.7                | 1.2            | 0      | 0.1        | 0     | 0    | 0          | 0       | 0          | 0.9   | 0.2      | C  | С    | т<br>С     | 0.7        |

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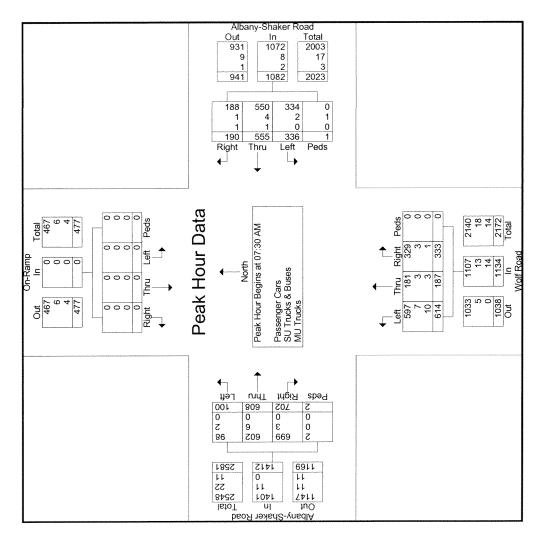
Exit 3/Exit 4

7 to 9 AM

Albany Shaker Road & Wolf Road

File Name: Albany Shaker Road & Wolf Road AM Site Code: 01270916 : 1/27/2009 Start Date

Page No



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> Albany Shaker Road & Wolf Road AM Exit 3/Exit 4 7 to 9

Site Code : 01270916 Start Date : 1/27/2009 Page No : 1

File Name: Albany Shaker Road & Wolf Road AM

| Southbound   Mostpound   Mos |                     |       | J    | On-Ramp | a      |           |       | Albany- | -Shaker Road | Road   |            |  | \$   | Wolf Road                               | 73            |            |  | Albany. | Albany-Shaker Road | Road                                    |            |            |
|--|---------------------|-------|------|---------|--------|-----------|-------|---------|--------------|--|------------|--|------|---|---------------|------------|--|---------|--------------------|---|------------|------------|
| Right         Thru         Left         PedS         App. Total         Right         Thru         Left         App. Total         Thru         App. Total         Thru         Left         App. Total         App. Total         Thru         Left         App. Total   |                     |       | So   | uthbou  | nd     |           |       | We      | stbount      | 7"   |            |  | Š    | rthbour                                 | ğ             |            |  | щ       | stbound            | 73                                      |            |            |
| 0         0         0         1         44         89         45         0         178         51         32         107         0         190         115         104         21           0         0         0         0         52         149         120         62         0         219         48         35         124         0         278         187         138         27           0         0         0         0         0         49         121         89         15         165         0         298         155         173         28           0         0         0         0         0         145         74         0         269         89         49         166         0         298         155         175         197         175         197         175         197         <  | Start Time          | Right | Thru | Left    | Peds A | pp. Total | Right | Thru    | Left         | L  | \pp. Total | Right  | Thru | Left                                    | $\overline{}$ | App. Total | Right  | Thru    | Left               | L                                       | App. Total | Int. Total |
| 0         0         0         37         120         62         0         219         48         35         124         0         207         187         138         27         138         27         138         27         149         148         35         175         0         208         155         173         28         175         178         189         178         178         178         189         178         178         189         178         178         189         178         189         189         189         147         0         208         161         564         189         178         189         189         147         0         278         189         147         0         289         147         0         289         147         0         289         147         0         289         147         0         289         147         0         289         147         0         289         147         188         189         147         189         189         147         189         189         149         189         147         0         289         149         189         147         0         289   | 07:00 AM            | 0     | 0    | 0       | -      | -         | 44    | 88      | 45           | 0  | 178        | 51   | 32   | 107                                     | 0             | 190        | 115  | 104     | 21                 | 0                                       | 240        | 609        |
| 0         0         0         0         52         149         77         0         278         65         45         175         0         285         155         173         28           0         0         0         0         49         121         89         14         160         0         298         159         128         31           0         0         0         1         1         182         479         160         0         298         160         0         298         161         543         107           0         0         0         14         122         47         0         269         90         39         147         0         276         197         162         197         172         18         197         152         197         192         197         18         190         0         276         197         192         190         191         172         191         172         192         190         191         172         114         190         182         111         112         172         114         114         140         140         140         140   | 07:15 AM            | 0     | 0    | 0       | 0      | 0         | 37    | 120     | 62           | 0  | 219        | 48   | 35   | 124                                     | 0             | 207        | 187  | 138     | 27                 | 0                                       | 352        | 778        |
| 0         0         0         0         49         121         89         1         260         89         49         160         0         298         159         128         31           0         0         0         1         1         182         479         273         1         935         160         0         980         616         543         107 <t< td=""><td>07:30 AM</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>25</td><td>149</td><td>77</td><td>0</td><td>278</td><td>65</td><td>45</td><td>175</td><td>0</td><td>285</td><td>155</td><td>173</td><td>28</td><td>2</td><td>358</td><td>921</td></t<>   | 07:30 AM            | 0     | 0    | 0       | 0      | 0         | 25    | 149     | 77           | 0  | 278        | 65   | 45   | 175                                     | 0             | 285        | 155  | 173     | 28                 | 2                                       | 358        | 921        |
| 0         0         0         1         1         182         479         273         1         935         253         161         566         0         980         616         543         107           0         0         0         0         0         44         125         67         0         275         197         155         19           0         0         0         0         0         44         125         67         0         276         99         248         215         197         155         19           0         0         0         0         0         0         244         125         67         0         276         89         54         132         0         248         215         124         21           0         0         0         0         0         171         480         320         0         971         178         520         1         1016         815         564         85           0         0         0         0         0         1         1         44         15         89         593         108         11         1016  | 07:45 AM            | 0     | 0    | 0       | 0      | 0         | 49    | 121     | 83           | -  | 260        | 88   | 49   | 160                                     | 0             | 298        | 159  | 128     | 31                 | 0                                       | 318        | 876        |
| 0         0         0         50         145         74         0         269         90         39         147         0         275         197         152         12           0         0         0         0         39         140         96         0         275         89         54         132         0         275         197         155         19           0         0         0         0         44         125         67         0         236         66         52         130         0         248         215         124         21           0         0         0         0         0         0         171         480         320         0         971         176         815         564         85           0         0         0         0         177         480         320         0         31         176         815         17         544         0.1         196         82         9         10         9         10         9         10         10         10         10         10         10         10         10         10         10         10         10 <td>Total</td> <td>0</td> <td>0</td> <td>0</td> <td>-</td> <td>_</td> <td>182</td> <td>479</td> <td>273</td> <td>-</td> <td>935</td> <td>253</td> <td>161</td> <td>566</td> <td>0</td> <td>980</td> <td>616</td> <td>543</td> <td>107</td> <td>2</td> <td>1268</td> <td>3184</td>   | Total               | 0     | 0    | 0       | -      | _         | 182   | 479     | 273          | -  | 935        | 253  | 161  | 566                                     | 0             | 980        | 616  | 543     | 107                | 2                                       | 1268       | 3184       |
| 0         0         0         39         140         96         0         275         89         54         132         0         275         197         155         19           0         0         0         0         44         125         67         0         236         66         52         130         0         248         215         124         21           0         0         0         0         171         480         320         0         971         17         178         520         1         1016         815         564         85           0         0         0         1         1         353         959         593         1         1906         570         339         1086         1         1016         815         564         85           0         0         0         100         1         1         353         959         593         1         1906         570         31         1016         815         564         85           0         0         0         0         0         0         0         28.6         57         17         16.4   | 08:00 AM            | 0     | 0    | 0       | 0      | 0         | 20    | 145     | 74           | 0  | 269        | 06   | 38   | 147                                     | 0             | 276        | 191  | 152     | 22                 | 0                                       | 365        | 910        |
| 0         0         0         0         44         125         67         0         236         66         52         130         0         248         215         124         21         23         23         111         1         217         212         133         23         13         23         111         1         217         212         133         23         23         111         1         217         1         1         217         1  | 08:15 AM            | 0     | 0    | 0       | 0      | 0         | 33    | 140     | 96           | 0  | 275        | 88   | 54   | 132                                     | 0             | 275        | 197  | 155     | 19                 | 0                                       | 371        | 921        |
| 0         0         0         0         38         70         83         0         191         72         33         111         1         217         212         133         23           0         0         0         0         0         171         480         320         0         971         317         178         520         1         1016         815         564         85           0         0         0         1         171         480         320         0         971         178         520         1         1016         815         564         85           0         0         0         100         1         18.5         50.3         31.1         0.1         108         1         1906         17         40.5         17         109         17         109         17         109         100   | 08:30 AM            | 0     | 0    | 0       | 0      | 0         | 44    | 125     | 29           | 0  | 236        | 99   | 52   | 130                                     | 0             | 248        | 215  | 124     | 21                 | 0                                       | 360        | 844        |
| 0         0         0         0         0         171         480         320         0         971         317         178         520         1         1016         815         564         85           0         0         0         100         1         1353         959         593         1         1906         570         339         1086         1         1996         1431         1107         192           0         0         0         100         1         18.5         50.3         31.1         0.1         28.6         57         6.1         16.4         0.1         107         192         7           0         0         0         0         0         0         0         30.1         16.4         0         30.1         16.7         2.9         7           0         0         0         0         0         0         0         0         0         0         0         0         0         98.5         98.8         97.6         97         10         98.4         98.8         10         10         0         0         0         0         0         0         0         0   | 08:45 AM            | 0     | 0    | 0       | 0      | 0         | 38    | 70      | 83           | 0  | 191        | 72   | 33   | ======================================= | _             | 217        | 212  | 133     | 23                 | 0                                       | 368        | 776        |
| 0         0         0         1         1         353         959         593         1         1906         570         339         1086         1         1996         1431         1107         192           0         0         0         0         0         0         0         0         28.7         8.6         5.1         16.4         0.1         27.4         40.5         7           0         0         0         0         0         0         0         21.6         40.5         7         10         27.6         99.4         98.8         97.6         97.1         10         97.6         99.4         98.8         99         1           0         0         0         0         0         0         0         2         15         1         23         5         5         17         0         27         9         9         2           0         0         0         0         0         0         0         1.4         0.6         0         9         2         1         0         1         0         0         0         0         0         0         0         0 <td< td=""><td>Total</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>171</td><td>480</td><td>320</td><td>0</td><td>971</td><td>317</td><td>178</td><td>520</td><td>-</td><td>1016</td><td>815</td><td>564</td><td>85</td><td>0</td><td>1464</td><td>3451</td></td<>  | Total               | 0     | 0    | 0       | 0      | 0         | 171   | 480     | 320          | 0  | 971        | 317  | 178  | 520                                     | -             | 1016       | 815  | 564     | 85                 | 0                                       | 1464       | 3451       |
| 0         0         0         18.5         50.3         31.1         0.1         28.6         17         54.4         0.1         52.4         40.5         7           0<   | Grand Total         | 0     | 0    | 0       | ₩-     | _         | 353   | 959     | 593          | <del></del>  | 1906       | 570  | 339  | 1086                                    | -             | 1996       | 1431   | 1107    | 192                | 2                                       | 2732       | 6635       |
| 0          | Apprch %            | 0     | 0    | 0       | 100    | ~~~~      | 18.5  | 50.3    | 31.1         | 0.1  |            | 28.6   | 17   | 54.4                                    | 0.1           |            | 52.4   | 40.5    | 7                  | 0.1                                     |            |            |
| 0         0         0         100  | Total %             | 0     | 0    | 0       | 0      | 0         | 5.3   | 14.5    | 8.9          | 0  | 28.7       | 8.6  | 5.1  | 16.4                                    | 0             | 30.1       | 21.6   | 16.7    | 2.9                | 0                                       | 41.2       |            |
| 0         0         0         100         100         100         98.9         98.2         99.6         98.8         97.6         97         100         97.6         99.4         98.8         99         1           0         0         0         0         2         15         5         1         23         5         5         17         0         27         9         9         2           0         0         0         0         0         0         0         1.2         0         1.5         1.6         0         1.4         0.6         0.8         1           0         0         0         0         0         0         0         0         1.4         0.6         0.8         1           0  | Passenger Cars      |       |      |         |        |           |       |         |              | Management and the control of the co |            | ACCOUNTS OF THE PROPERTY OF TH |      |   |               |            | Albert and a second sec |         |                    | *************************************** |            |            |
| 0 0 0 0 0 0 0 2 15 5 1 23 5 17 0 27 9 9 2<br>0 0 0 0 0 0 0.6 1.6 0.8 100 1.2 0.9 1.5 1.6 0 1.4 0.6 0.8 1<br>0 0 0 0 0 0 0 0 0.6 0.2 0.2 0 0.3 0.4 0.9 1.5 0 1.1 0 0.4 0  | % Passenger Cars    | 0     | 0    | 0       | 100    | 100       | 98.9  | 98.2    | 66           | 0  | 98.5       | 98.8   | 97.6 | 97                                      | 100           | 97.6       | 99.4   | 98.8    | 66                 | 100                                     | 99.1       | 98.5       |
| 0 0 0 0 0 0 0 0.6 1.6 0.8 100 1.2 0.9 1.5 1.6 0 1.4 0.6 0.8 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  | SU Trucks & Buses   | 0     | 0    | 0       | 0      | 0         | 2     | 15      | 5            | -  | 23         | 5  | 5    | 17                                      | 0             | 27         | 6  | 6       | 2                  | 0                                       | 20         | 70         |
| 0 0 0 0 0 0 2 2 1 0 5 2 3 16 0 21 0 4 0 0 0 0 0 0 0.6 0.2 0.2 0 0.3 0.4 0.9 1.5 0 1.1 0 0.4 0  | % SU Trucks & Buses | 0     | 0    | 0       | 0      | 0         | 9.0   | 1.6     | 0.8          | 100  | 1.2        | 6.0  | 1,5  | 1.6                                     | 0             | 4.1        | 0.6  | 0.8     | τ                  | 0                                       | 0.7        | -          |
| 0 0 0 0 0 0 0.6 0.2 0.2 0 0.3 0.4 0.9 1.5 0 1.1 0 0.4 0  | MU Trucks           | 0     | 0    | 0       | 0      | 0         | 2     | 2       | -            | 0  | 5          | 2  | က    | 16                                      | 0             | 21         | 0  | 4       | 0                  | 0                                       | 4          | 30         |
|  | % MU Trucks         | 0     | 0    | 0       | 0      | 0         | 9.0   | 0.2     | 0.2          | 0  | 0.3        | 0.4  | 6.0  | 1.5                                     | 0             | <u></u>    | 0  | 0.4     | 0                  | 0                                       | 0.1        | 0.5        |

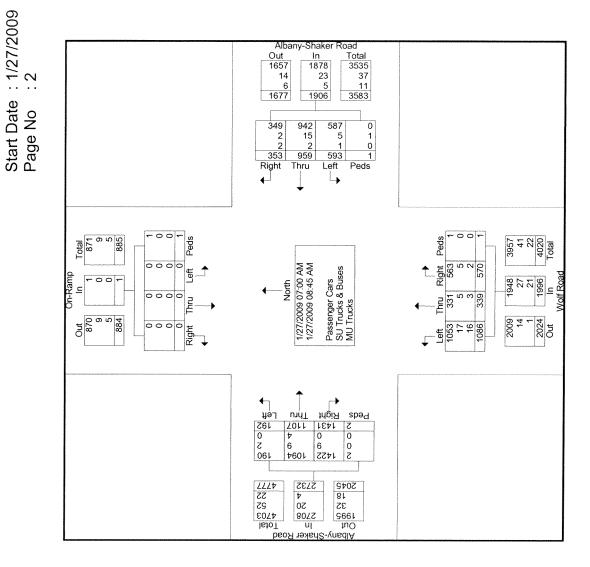
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File Name: Albany Shaker Road & Wolf Road AM

Site Code : 01270916

Albany Shaker Road & Wolf Road Exit 3/Exit 4

AM 7 to 9



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Exit 3/Exit 4 Albany Shaker Road & Wolf Road AM 7 to 9

File Name: Albany Shaker Road & Wolf Road AM Site Code: 01270916 Start Date: 1/27/2009 Page No: 3

|  |             | Ŭ à       | On-Ramp     | <u>a</u> 9           |            |       | Albany      | -Shaker Road | Road         |            |           | ≥ :  | Wolf Road  |        | 1000       |          | Albany-Shaker Road | Shaker     | Road   | The second secon |           |
|--|-------------|-----------|-------------|----------------------|------------|-------|-------------|--------------|--------------|------------|-----------|------|------------|--------|------------|----------|--------------------|------------|--------|--|-----------|
|  | - 1         | ñ         | Southbounds | <b>D</b> E           |            |       | Š           | stboun       |              |            |           | ŝ    | Northbound | -      |            |          | Eas                | Eastbound  |        |  |           |
| Start Time   | Right       | Thru      |             | Left Peds App. Total | App. Total | Right | Thru        | Left         | Peds A       | App. Total | Right     | Thru | Left       | Peds A | App. Total | Right    | Thru               | Left       | Peds A | Ann Total Ir   | Int Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of | sis From (  | 07:00 AM  | to 08:45    | AM - Pea             | ak 1 of 1  |       |             |              |              |            | -         |      |            | 7      |            |          |                    | 7          |        | [  |           |
| Peak Hour for Entire Intersection Begins at 07:30 AM     | tire Inters | ection Be | gins at 0   | 7:30 AM              |            |       |             |              |              |            |           |      |            |        |            |          |                    |            |        |  |           |
| 07:30 AM   | 0           | 0         | 0           | 0                    | 0          | 25    | 149         |              |              | 278        |           | J    | 175        |        | and the    |          |                    | đ          | ·      | ~~~  | 024       |
| 07:45 AM   | 0           | 0         | 0           | 0                    | 0          | 49    | 121         | 89           | -            | 260        | 83        | 9    | 160        | 0      | 298        | 159      |                    | ٦ <u>٢</u> | ı c    | 318  | 876       |
| 08:00 AM   | 0           | 0         | 0           | 0                    | 0          | 20    | 145         | 74           | 0            | 269        | 06        | 39   | 147        | 0      | 276        | 191      |                    | 22         | ) C    | 36.5   | 200       |
| 08:15 AM   | 0           | 0         | 0           | 0                    | 0          | 33    | 140         | 96           | 0            | 275        | 88        | 54   | 132        | 0      | 275        | 197      | 155                | 19         | · C    | 371  | 921       |
| Total Volume   | 0           | 0         | 0           | 0                    | 0          | 190   | 555         | 336          | 1            | 1082       | 333       | 187  | 614        | 0      | 1134       | 702      |                    | 100        | 2      | 1412   | 3628      |
| % App. Total   | 0           | 0         | 0           | 0                    |            | 17.6  | 51.3        | 31.1         | 0.1          |            | 29.4      | 16.5 | 54.1       | 0      |            | 49.7     |                    | 2,7        | 0.1    | }  | 1         |
| Ή  | 000.        | 000.      | 000:        | 000.                 | 000.       | .913  | .931        | .875         | .250         | .973       | .925      | .866 | .877       | 000    | .951       | 891      |                    | 806        | 250    | 951  | 985       |
| Passenger Cars   | 0           | 0         | 0           | 0                    | 0          | 188   | 550         | 334          | 0            | 1072       | 329       | 181  | 597        | 0      | 1107       | 669      |                    | 98         | 2      | 1401   | 3580      |
| % Passenger Cars   | 0           | 0         | 0           | 0                    | 0          | 98.9  | 99.1        | 99.4         | 0            | 99.1       | 98.8      | 96.8 | 97.2       | 0      | 97.6       | 9.66     |                    | 0.86       | 100    | 660  | 082       |
| SU Trucks & Buses  | 0           | 0         | 0           | 0                    | 0          | ~     | 4           | 7            | <del>-</del> | 8          | က         | က    | 7          | 0      | 13         | <u>ښ</u> |                    | 2          | 2      | , ,  | 33        |
| % SU Trucks & Buses                                      | 0           | 0         | 0           | 0                    | 0          | 0.5   | 0.7         | 9.0          | 100          | 0.7        | 6.0       | 1.6  | 1.         | 0      | <u></u>    | 4.0      |                    | 2.0        | 0      | 0.8  | 6.0       |
| MU Irucks  | 0           | 0         | 0           | 0                    | 0          | •     | <del></del> | 0            | 0            | 7          | <b></b> - | က    | 10         | 0      | 14         | 0        |                    | 0          | C      | C  | 5         |
| % MU Trucks  | 0           | 0         | 0           | 0                    | 0          | 0.5   | 0.2         | 0            | 0            | 0.2        | 0.3       | 1.6  | 1.6        | 0      | 1.2        | 0        |                    | 0          | 0      | 0  | 0.4       |

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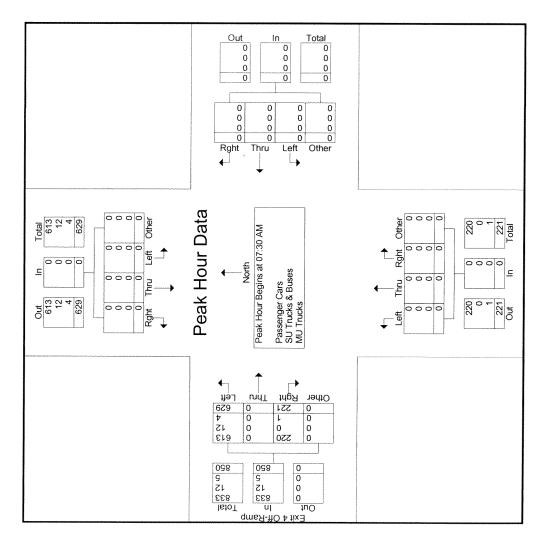
Exit 3/Exit 4 Exit 4 NB Off-Ramp

AM 7-9

File Name: Exit 4 NB Off-Ramp 00000000: Site Code

: 1/27/2009 Start Date

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: Exit 4 NB Off-Ramp

File Name

: 00000000 : 1/27/2009

Start Date Site Code

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Exit 4 NB Off-Ramp Exit 3/Exit 4 AM

6-7

8 8 0.6 Other App. Total Int. Total 122 184 260 260 206 183 181 770 122 184 260 361 206 183 181 770 1.5 8 0.6 000-0.0 Exit 4 Off-Ramp Eastbound 72.8 72.8 Left 94 150 194 509 143 124 124 533 27.1 27.1 99.2 2 0.5 63 59 56 236 236 28 34 52 52 Other | App. Total Groups Printed- Passenger Cars - SU Trucks & Buses - MU Trucks Northbound Left Total App. Other Westbound Left App. Total Other Southbound Left 07:00 AM 07:15 AM 07:30 AM 07:45 AM 08:00 AM 08:15 AM 08:30 AM 08:45 AM Grand Total Apprch % Total % Start Time Passenger Cars SU Trucks & Buses % MU Trucks % Passenger Cars **MU Trucks** % SU Trucks & Buses

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: 1/27/2009 : 2

Start Date : Page No :

Out 0 0 0 0 0 Total 0 0 0 0 0 0 0 0 0 0 0 Rght 0 0 0 0 Thru 0 0 0 0 Left 0 0 0 0 Other 0 0 0 Other Total 1016 19 7 1042 385 388 Total 0000 Passenger Cars SU Trucks & Buses MU Trucks t \_t 1/27/2009 07:00 AM 1/27/2009 08:45 AM North 드 0000 Thr Out 1016 19 7 1042 385 388 Out 0000 Rght Left ↑ ↑ ↑ ↑ ↑ 385 388 Rght 1016 1042 1042 Other 0 0 0 LetoT 2041 1S 8 1431 Exit 4 Off-Ramp

1431

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Exit 3/Exit 4 Exit 4 NB Off-Ramp

AM 7-9

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File Name: Exit 4 NB Off-Ramp Site Code: 000000000 Start Date: 1/27/2009 Page No: 3

Exit 3/Exit 4 Exit 4 NB Off-Ramp AM 7-9

|                | Totol                | ר סומו   |                  |  | 184      | 260      | 200      | 206      | 850          | )            | 817  | 833            | 98.0             | 12                | 4                   | . rc      | 0.6         |
|----------------|----------------------|--|------------------|--|----------|----------|----------|----------|--------------|--------------|------|----------------|------------------|-------------------|---------------------|-----------|-------------|
|                |                      | App. rotal III   |                  |  | 184      | 260      | 200      | 206      | 850          | )<br>)<br>)  | .817 | 833            | 98.0             | 12                | 14                  | . K       | 9.0         |
| dw             | , the                |  |                  |  | C        | >        | C        | ) C      | ) C          | · C          | 000  | 0              | 0                | 0                 | 0                   | · C       | 0           |
| dit 4 Off-Ramp | 100001               | CON  |                  |  | 150      | 194      | 142      | 143      | 629          | 74           | .811 | 613            | 97.5             | 12                | 6                   | 7         | 9.0         |
| Exit 4 (       | J H                  | 2  |                  |  | C        | >        | C        | o c      | 0            | · C          | 000  | 0              | 0                | 0                 | 0                   | · C       | 0           |
|                | Dobt                 | 3.60   |                  |  | 34       | 99       | , K      | 3 8      | 221          | 26           | .837 | 220            | 99.5             | 0                 | 0                   | •         | 0.5         |
|                | Ann Total            | יישליר   |                  |  | C        | · C      | · C      | · C      | 0            | ,            | 000  | 0              | 0                | 0                 | 0                   | C         | 0           |
| 7              | Other                |  |                  |  | 0        | 0        | c        | · C      | 0            | 0            | 000  | 0              | 0                | 0                 | 0                   | C         | 0           |
| Morthbound     | #4                   |  |                  |  | 0        | 0        | C        | 0        | 0            | 0            | 000  | 0              | 0                | 0                 | 0                   | C         | 0           |
| Ž              | Thru                 |  |                  |  | 0        | 0        | 0        | 0        | 0            | 0            | 000  | 0              | 0                | 0                 | 0                   | 0         | 0           |
|                | Robt                 |  |                  |  | 0        | 0        | 0        | 0        | 0            | 0            | 000. | 0              | 0                | 0                 | 0                   | 0         | 0           |
|                | Ann Total            |  |                  |  | 0        | 0        | 0        | 0        | 0            |              | 000  | 0              | 0                | 0                 | 0                   | 0         | 0           |
| 7              | Other                | -  |                  |  | 0        | 0        | 0        | 0        | 0            | 0            | 000  | 0              | 0                | 0                 | 0                   | 0         | 0           |
| n other        | left l               |  |                  |  | 0        | 0        | 0        | 0        | 0            | 0            | 000  | 0              | 0                | 0                 | 0                   | 0         | 0           |
| ×              | Thru                 |  |                  |  | 0        | 0        | 0        | 0        | 0            | 0            | 000. | 0              | 0                | 0                 | 0                   | 0         | 0           |
|                | Raht                 | 9  |                  |  | 0        | 0        | 0        | 0        | 0            | 0            | 000  | 0              | 0                | 0                 | 0                   | 0         | 0           |
|                | Left Other App Total | 1 4 OF 4   | 5 - 5            |  | 0        | 0        | 0        | 0        | 0            |              | 000  | 0              | 0                | 0                 | 0                   | 0         | 0           |
| þ              | Other                |  | Ď Z.             | 7:30 AM  | 0        | 0        | 0        | 0        | 0            | 0            | 000. | 0              | 0                | 0                 | 0                   | 0         | 0           |
| Southbound     | Left                 | 100.45   | 10 00.40         | gins at 0  | 0        | 0        | 0        | 0        | 0            | 0            | 000. | 0              | 0                | 0                 | 0                   | 0         | 0           |
| Sc             | Thru                 | 7.00 044   | 200.             | action Be  | 0        | 0        | 0        | 0        | 0            | 0            | 000. | 0              | 0                | 0                 | 0                   | 0         | 0           |
|                | Raht                 | Erom O   | 200              | re Interse   | 0        | 0        | 0        | 0        | 0            | 0            | 000. | 0              | 0                | 0                 | 0                   | 0         | 0           |
|                | Start Time           | Doak Hour Analysis From 07:00 AMM to 00:45 AMM Book 4 of | can ilou Allaiya | Peak Hour for Entire Intersection Begins at 07:30 AM | 07:30 AM | 07:45 AM | 08:00 AM | 08:15 AM | Total Volume | % App. Total | 生    | Passenger Cars | % Passenger Cars | SU Trucks & Buses | % SU Trucks & Buses | MU Trucks | % MU Trucks |

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File Name: Sand Creek & Wolf Road TOTAL AM

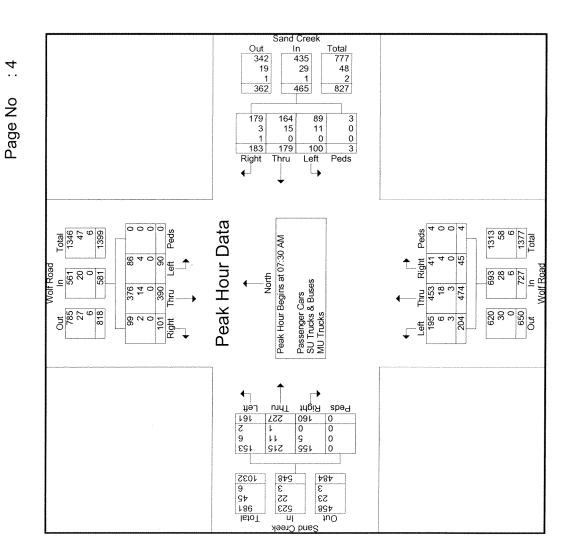
: 12345678 : 1/27/2009

Site Code Start Date

Exit 3/Exit 4

Sand Creek & Wolf Road

AM 7 to 9



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> Sand Creek & Wolf Road Exit 3/Exit 4 AM 7 to 9

File Name: Sand Creek & Wolf Road TOTAL AM Site Code: 12345678
Start Date: 1/27/2009
Page No: 1

|                     |       | > <sub>v</sub> | Wolf Road | <u>,</u> |                 |  | Sar  | Sand Creek | ¥           |            |  | > 2  | Wolf Road  | 7  |            | American materials assumed a six playing a material or some  | Sa                                      | Sand Creek | * -                                    |            |                                       |
|---------------------|-------|----------------|-----------|----------|-----------------|--|------|------------|-------------|------------|--|------|--|--|------------|--|---|------------|--|------------|---------------------------------------|
|                     |       | S i            | 3         | 2        |                 |  |      | dathou     | 2           |            |  | 2    |  | 2  | -          |  | Ü                                       | Eastbound  | 0                                      |            |                                       |
| Start IIme          | Right | nu             | Left      | Peds     | Peds App. Total | Right  | ם    | Left       | Peds 6      | App. Total | Right  | Thru | Left   | Peds A   | App. Total | Right  | Thru                                    | Left       | Peds A                                 | App. Total | Int. Total                            |
| 07:00 AM            | 4     | 99             | 18        |          | 66              | 20   | 23   | +          | _           | 55         | 4  | 44   | 21   | 0  | 69         | 35   | 53                                      | 24         | 0                                      | 112        | 335                                   |
| 07:15 AM            | 13    | 94             | 23        | 0        | 130             | 35   | 36   | 56         | က           | 100        | 15   | 82   | 40   | 2  | 142        | 4  | 34                                      | 32         | · C                                    | 107        | 479                                   |
| 07:30 AM            | 25    | 103            | 31        | 0        | 159             | 45   | 27   | 25         | 0           | 97         | 18   | 87   | 52   | 0  | 157        | 48   | 69                                      | 3 6        | · C                                    | 149        | 562                                   |
| 07:45 AM            | 24    | 66             | 16        | 0        | 139             | 48   | 20   | 31         | 2           | 151        | 4  | 133  | 22   | 4  | 198        | 4  | 47                                      | 38         | 0                                      | 126        | 614                                   |
| Total               | 9/    | 362            | 88        | +-       | 527             | 148  | 156  | 93         | 9           | 403        | 41   | 349  | 170  | 9  | 266        | 165  | 203                                     | 126        | 0                                      | 494        | 1990                                  |
| 08:00 AM            | 22    | 93             | 27        | 0        | 142             | 49   | 45   | 25         | 0           | 119        | 4  | 118  | 44   | 0  | 176        | 20   | 49                                      | 38         | С                                      | 137        | 574                                   |
| 08:15 AM            | 30    | 92             | 16        | 0        | 141             | 41   | 37   | 19         | <del></del> | 86         | 6  | 136  | 51   | 0  | 196        | 21   | 62                                      | 23         | 0                                      | 136        | 571                                   |
| 08:30 AM            | 26    | 90             | 14        | 0        | 130             | 58   | 39   | 19         | 0           | 87         | 7  | 123  | 42   | 0  | 176        | 36   | 09                                      | 38         | 0                                      | 134        | 527                                   |
| 08:45 AM            | 28    | 91             | 14        | τ-       | 134             | 30   | 42   | 15         | <del></del> | 88         | 6  | 135  | 37   | 7  | 183        | 40   | 43                                      | 44         | 0                                      | 127        | 532                                   |
| Total               | 106   | 369            | 71        | -        | 547             | 149  | 163  | 78         | 2           | 392        | 43   | 512  | 174  | 2  | 731        | 147  | 214                                     | 173        | 0                                      | 534        | 2204                                  |
| Grand Total         | 182   | 731            | 159       | 2        | 1074            | 297  | 319  | 171        | 80          | 795        | 84   | 861  | 344  | ∞  | 1297       | 312  | 417                                     | 299        | 0                                      | 1028       | 4194                                  |
| Apprch %            | 16.9  | 68.1           | 14.8      | 0.2      |                 | 37.4   | 40.1 | 21.5       | _           |            | 6.5  | 66.4 | 26.5   | 9.0  |            | 30.4   | 40.6                                    | 29.1       | 0                                      |            |                                       |
| Total %             | 4.3   | 17.4           | 3.8       | 0        | 25.6            | 7.1  | 9.7  | 4.1        | 0.2         | 19         | 7  | 20.5 | 8.2  | 0.2  | 30.9       | 7.4  | о<br>О                                  | 7.1        | 0                                      | 24.5       |                                       |
| Passenger Cars      |       |                |           |          |                 | The same of the sa |      |            |             |            | THE COMMUNICATION AND ADDRESS OF THE PARTY O |      | A STATE OF THE PARTY OF THE PAR | And the second s |            | VIVI LORDON DE LA CONTRACTOR DE LA CONTR | *************************************** |            | VVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVV | 2          | Trecommendation to the second teacher |
| % Passenger Cars    | 97.8  | 96.3           | 6.96      | 100      | 96.6            | 86   | 91.5 | 87.7       | 100         | 93.2       | 88.1   | 95.5 | 96.2   | 100  | 95.2       | 97.8   | 91.8                                    | 26         | 0                                      | 95.1       | 95.2                                  |
| SU Trucks & Buses   | 4     | 27             | 2         | 0        | 36              | က  | 26   | 21         | 0           | 20         | 6  | 35   | 10   | 0  | 54         |  | 33                                      |            | 0                                      | 47         | 187                                   |
| % SU Trucks & Buses | 2.2   | 3.7            | 3.1       | 0        | 3.4             | •  | 8.2  | 12.3       | 0           | 6.3        | 10.7   | 4.1  | 2.9  | 0  | 4.2        | 2.2  | 7.9                                     | 2.3        | 0                                      | 4.6        | 4.5                                   |
| MU Trucks           | 0     | 0              | 0         | 0        | 0               | 3  | -    | 0          | 0           | 4          | -  | 4    | က  | 0  | 00         | 0  | _                                       | 2          | С                                      |            | 15                                    |
| % MIJ Trucks        | _     | C              | C         | C        | c               | *  | c    | •          | •           | L          | •  | (    | (  | •  | 1          |  |   |            | ,                                      | ,          |                                       |

File Name: Sand Creek & Wolf Road TOTAL AM

Site Code : 12345678

: 1/27/2009

Start Date Page No

7

Sand Creek & Wolf Road Exit 3/Exit 4

AM 7 to 9

Sand Creek & Wolf Road Exit 3/Exit 4 AM 7 to 9

File Name: Sand Creek & Wolf Road TOTAL AM Site Code: 12345678
Start Date: 1/27/2009
Page No: 3

|  |              | ≥ 3       | Wolf Road  | <u>ا</u> و           | ************* |       | Sa   | ind Creek | - x-        |            |       | ≥ :  | Wolf Road  |        |            |       | Sa   | Sand Creek | *  |            |            |
|--|--------------|-----------|------------|----------------------|---------------|-------|------|-----------|-------------|------------|-------|------|------------|--------|------------|-------|------|------------|--|------------|------------|
|  |              | 00        | Southbound | 2                    |               |       |      | estponud  | 8           |            |       | Š    | Northbound | 8      |            |       | Щ    | Eastbound  | ō  |            |            |
| Start Time   | Right        | Thru      |            | Left Peds App. Total | . Total       | Right | Thru | Left      | Peds A      | App. Total | Right | Thr  | Left       | Peds A | App. Total | Right | Thru | Left       | Peds   | App. Total | Int. Total |
| Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | is From 0    | 7:00 AM   | to 08:45   | AM - Peak            | 1 of 1        |       |      |           |             |            |       |      |            | -      |            |       |      | ~          | - Annual Control of the Control of t |            |            |
| Dook Hours for Fat   | The last and |           |            | 1                    |               |       |      |           |             |            |       |      |            |        |            |       |      |            |  |            |            |
| reak hour for Entire intersection Begins at 07:30 AM       | ire interse  | sction Be | gins at 0  | 7:30 AM              |               |       |      |           |             |            |       |      |            |        |            |       |      |            |  |            |            |
| 07:30 AM   | 25           | 103       | 33         |                      | 159           |       |      |           |             | -          | 18    |      |            |        |            |       | 69   |            |  | 149        |            |
| 07:45 AM   | 24           | 66        | 16         | 0                    | 139           | 48    | 2    | 31        | 7           | 151        | 4     | 133  | 21         | 4      | 198        | 41    | 47   | 38         | 0  | 126        | 614        |
| 08:00 AM   | 22           | 93        | 27         | 0                    | 142           | 49    | 45   | 25        | 0           | 119        | 14    | 118  | 44         | 0      | 176        | 20    | 49   | 38         | 0  | 137        | 574        |
| 08:15 AM   | 30           | 92        | 16         | 0                    | 141           | 41    | 37   | 19        | <del></del> | 86         | თ     | 136  | 51         | 0      | 196        | 21    | 62   | 53         | 0  | 136        | 571        |
| Total Volume   | 101          | 330       | 6          | 0                    | 581           | 183   | 179  | 100       | က           | 465        | 45    | 474  | 204        | 4      | 727        | 160   | 227  | 161        | 0  | 548        | 2321       |
| % App. Total   | 17.4         | 67.1      | 15.5       | 0                    |               | 39.4  | 38.5 | 21.5      | 9.0         |            | 6.2   | 65.2 | 28.1       | 9.0    |            | 29.2  | 41.4 | 29.4       | 0  | 1          | i<br>i     |
| 井심   | .842         | .947      | .726       | 000.                 | .914          | .934  | .639 | .806      | .375        | .770       | .625  | .871 | .895       | .250   | .918       | .800  | .822 | .759       | 000  | .919       | .945       |
| Passenger Cars   | 66<br>6      | 376       | 86         | 0                    | 561           | 179   | 164  | 83        | က           | 435        | 41    | 453  | 195        | 4      | 693        | 155   | 215  | 153        | 0  | 523        | 2212       |
| % Passenger Cars   | 086          | 96.4      | 92.6       | 0                    | 96.6          | 8.76  | 91.6 | 89.0      | 100         | 93.5       | 91.1  | 92.6 | 92.6       | 100    | 95.3       | 6.96  | 94.7 | 95.0       | 0  | 95.4       | 95.3       |
| SU Trucks & Buses  | 7            | 4         | 4          | 0                    | 20            | က     | 15   | 7         | 0           | 53         | 4     | 18   | 9          | 0      | 28         | S     | 7    | 9          | 0  | 22         | 66         |
| % SU Trucks & Buses  | 2.0          | 3.6       | 4.4        | 0                    | 3.4           | 1.6   | 8.4  | 11.0      | 0           | 6.2        | 8.9   | 3.8  | 5.9        | 0      | 3.9        | 3,1   | 8.4  | 3.7        | 0  | 4.0        | 4.3        |
| MU Trucks  | 0            | 0         | 0          | 0                    | 0             | τ-    | 0    | 0         | 0           | ~          | 0     | က    | ო          | 0      | 9          | 0     | -    | ^          | C  | ۲.         | 10         |
| % MU Trucks  | 0            | 0         | 0          | 0                    | 0             | 0.5   | 0    | 0         | 0           | 0.2        | 0     | 9.0  | 1.5        | 0      | 0.8        | O     | 0.4  | 10         | · C  | 0.25       | 5.0        |
|  |              |           |            |                      |               |       |      |           |             | -          |       |      |            | į      |            | ,     |      | !          | )  | )          | Ś          |

Exit 3/Exit 4

7 to 9 AM

> Exit 3/Exit 4 AM 7 to 9

Watervliet Shaker Road & Exit 5 SB Ramp

File Name: Watervliet Shaker Road & Exit 5 SB Ramp AM Site Code: 111111111 Start Date: 1/27/2009 Page No: 1

| hamma               |  | _                                       | Off-Ramp   | <del>Q</del>   |                 |  | ıΣ       | Route 155   | 5      |            |               | 0              | On-Ramp       |   |          |             | Ron  | Route 155     | Add Many and printer property and a second |           |           |
|---------------------|--|---|------------|--|-----------------|--|----------|-------------|--------|------------|---------------|----------------|---------------|---|----------|-------------|--|---------------|--|-----------|-----------|
|                     | ***************************************  | ഗ്                                      | Southbound | pur  | •               |  | 3        | estbound    | Þ      |            |               | N <sub>O</sub> | Northbound    | Ţ.                                      |          |             | Fact   | Fasthound     |  | ********* |           |
| Start Time          | Right  | Thru                                    | Left       | Peds   | Peds App. Total | Right  | Thru     | Left        | Peds , | App. Total | Right         | Thru           | Left          | Peds Ann Total                          | -        | Right       | Thai   | t da          | Dade                                       | Ann Total | Int Tatal |
| 07:00 AM            | 30   | 9                                       | 68         | c  | 104             | C  | 01       | 9           | +      | 151        |               |                | c             |   | -        |             | 3 1  | -             |  |           | 111. 10td |
| 07-15 AM            | 33   | u                                       | 70         | · c  | . 4             |  | - 0      | 8 6         | > 0    | 2 (        | > '           | >              | >             | >                                       | <b>-</b> | ۍ           | 16   | 0             | 0  | 21        | 27E       |
| 24.00.10            | 3 1  | <b>&gt;</b> (                           | D :        | · C  | 0               | <b>&gt;</b>  | 143      | 108         | 0      | 251        | 0             | 0              | 0             | 0                                       | 0        | <del></del> | 31   | ۲             | C  | 43        | 415       |
| U7:30 AM            | 51   | 9                                       | 91         | 0  | 148             | 0  | 132      | 102         | 0      | 234        | С             | C              | C             | c                                       |          |             | . 00   | - c           | o c  | 2 (       | 7-1       |
| 07:45 AM            | 58   | 4                                       | 81         | 0  | 143             | 0  | 192      | 136         | С      | 328        | · C           | · C            | o c           | o c                                     | > <      | - 14        | 0 0  | <b>&gt;</b> 0 | > 0  | 9;        | 475       |
| Total               | 172  | 22                                      | 319        | 0  | 513             | 0  | 558      | 406         | 0      | 964        | 0             | 0              | 0             | > -                                     |          | -           | 30   | > T           | 0  | 47        | 512       |
|                     |  |   |            |  |                 |  |          |             |        |            | •             | )              | >             | >                                       |          |             | 77,  | -             | 5  | 0         | 7701      |
| 08:00 AM            | 99   | 12                                      | 89         | 0  | 157             | 0  | 151      | 112         | C      | 263        | <b>C</b>      | C              | c             | c                                       |          | *           | 1  | c             | c  |           |           |
| 08:15 AM            | 24   | 6                                       | 86         | C  | 152             | _  | 173      | 7           |        | 200        |               | 0              | 0             | > 0                                     |          | <u> </u>    | 7 + 1  | 0             | >  | LQ        | 481       |
| 08:30 AM            | 20   | α                                       | 9 0        | 0 0  | 10.             |  | )<br>- , | 0 0         | ۰ د    | 202        | >             | >              | >             | >                                       |          | 33          | 30   | 0             | 0  | 43        | 458       |
| 00.00               | 8 8  | > <del>-</del>                          | 9 6        | > 0  | 144             | _  | 109      | 100         | 0      | 210        | 0             | 0              | 0             | 0                                       | 0        | 9           | 43   | 0             | 0  | 49        | 403       |
| 21.00<br>1.00       | 000  | t c                                     | 0          |  | 110             | -  | 117      | 9/          | 0      | 194        | 0             | 0              | 0             | 0                                       |          |             | 45   | C             | C  | 4         | 275       |
| oral                | 88   | 33                                      | 331        | 0  | 263             | က  | 520      | 407         | 0      | 930        | 0             | 0              | 0             | 0                                       | 0        | 42 1        | 165  | 0             | 0  | 207       | 1700      |
| Grand Total         | 371  | 55                                      | 650        | 0  | 1076            | m  | 1078     | 813         | c      | 1804       | c             | c              | c             | c                                       |          |             | 1  | ,             | (  |           | ,         |
| Apprch %            | 34.5   | 5.1                                     | 60.4       | 0  |                 | 0.0  | 56.9     | 429         | o c    | 2          | o c           | <b>&gt;</b> C  | <b>&gt;</b> c | <b>&gt;</b> C                           | ·<br>·   |             |  | (             | <b>)</b>                                   | 358       | 3328      |
| Total %             | 11.1   | 1.7                                     | 19.5       | 0  | 32.3            | 0.1  | 32.4     | 24.4        | o c    | 56.0       | > <           | <b>&gt;</b> C  | > 0           |   |          | 3.0         | 2.08   | ກ ເ           | <b>)</b>                                   |           |           |
| Passenger Cars      | A STATE OF THE PARTY OF THE PAR | *************************************** |            | And the same of th |                 | A CONTRACTOR OF THE CONTRACTOR |          |             |        | 9          | <b>O</b>      |                | >             |   | 2        |             | α.α  | 0             | 0  | 10.8      |           |
| % Passenger Cars    | 99.2   | 100                                     | 98         | 0  | 98.5            | 66.7   | 97.6     | 86          | С      | 4 7 7      | C             | c              | c             | c                                       | 0 0 7    |             | 7 00   | ć             | c  | 3         |           |
| SU Trucks & Buses   | ო  | 0                                       | 12         | 0  | 15              | -  | 15       | 16          | c      | 32         |               |                |               | *************************************** | -        | ń           | THE PERSON AND ADDRESS OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NO | 200           | )  | S. 6      | 47.8      |
| % SU Trucks & Buses | 0.8  | С                                       | 200        | C  | 4               | 33 3   | . +      | 5 6         | o c    | 1 1        | <b>&gt;</b> 0 | <b>&gt;</b> (  | > 0           | -<br>-                                  | )<br>O ( |             | ٥  | >             | 0  | 22        | 59        |
| MITrucks            |  | 0                                       | -          | 0  | *               | 0.0  | t .      | 10          | 0      | 7.1        | 0             | 0              | 5             |   |          | 8.6         | 5.6  | 0             | 0  | 6.1       | 2.1       |
| % MII Trucks        | o c  | o c                                     | - c        | <b>&gt;</b> (  | - ,             | ) c  |          | <b>&gt;</b> | >      | _          | 0             | 0              | 0             | 0                                       | 0        | 4           | က  | 0             | 0  | 7         | 100       |
| SYSS CINCLES        | >  | >                                       | <br>       | >  |                 | =  | •        | _           | <      | · ·        | c             | (              | (             |   | _        |             |  |               |  |           |           |

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Watervliet Shaker Road & Exit 5 SB Ramp

Exit 3/Exit 4

AM 7 to 9

11111 : 1/27/2009 Site Code Start Date Page No

File Name: Watervliet Shaker Road & Exit 5 SB Ramp AM

> Exit 3/Exit 4 Watervliet Shaker Road & Exit 5 SB Ramp AM 7 to 9

File Name: Watervliet Shaker Road & Exit 5 SB Ramp AM

Site Code : 111111111 Start Date : 1/27/2009 Page No : 3

| 70004444   | A             | ၁၀၄        | Off-Ramp<br>Southbound | p<br>ud  |            |       | œ ≶   | Route 155<br>Westbound | č<br>br  |                 |       | 0 8           | On-Ramp<br>Northbound |  |           |       | 2 E     | Route 155 | 9      |                         |          |
|--|---------------|------------|------------------------|----------|------------|-------|-------|------------------------|--|-----------------|-------|---------------|-----------------------|--|-----------|-------|---------|-----------|--------|-------------------------|----------|
| Start Time Right Thru Left Peds App. Total           | Right         | Thru       | Leff                   | Peds /   | App. Total | Right | Thr   | Left                   | Peds   | Peds App. Total | Right | Thr           | Left                  | Left Peds App. Total   | υρ. Total | Right | Thru    | Left      | Peds 1 | Peds Ann Total Int Tota | Int Tota |
| Peak Hour Analy                                      | ysis From 0,  | 7:00 AM    | to 08:45               | AM - Pea | ak 1 of 1  |       |       |                        | The second secon |                 |       | A 60 market   |                       | The state of the s |           | J     |         |           | 2      | 744                     | 35       |
| Peak Hour for Entire Intersection Begins at 07:30 AM | ntire Interse | sction Beg | gins at 07             | 7:30 AM  |            |       |       |                        |  |                 |       |               |                       |  |           |       |         |           |        |                         |          |
| 07:30 AM   | 1 51          | 9          | 91                     |          |            |       | 130   |                        |  | _               |       |               |                       |  |           | Month | (N)     |           |        | -                       |          |
| 07:45 AM   | 58            | 4          | 8                      | 0        | 143        | О     | 192   | 136                    | C  | 328             | c     | C             | c                     | c  | C         | ⊳ L   | . (     | (         | (      |                         |          |
| 08:00 AM   | 56            | 12         | 8                      | C        | 157        | · C   | 1 1 1 |                        | 0 0  | 200             | 0 0   | <b>&gt;</b> ( | > (                   | <b>&gt;</b> (  | >         | ი     | 30<br>O | >         | >      | 4                       | 513      |
|  | )             | !          | )                      | >        | 2          | >     | 2     |                        | >  | 203             | >     | _             | =                     | _  | _         | 77    | 77      | _         | c      | 70                      | Č        |

|                       |                 | int. Iotal   |  |          |          | 512           | 481           | 458          | 4070        | 6/01         |      | 917            | 1810            | 9 6              | 90.x              | 48                   | 0          | ) i         | 12          | 9   | ; |
|-----------------------|-----------------|--|--|----------|----------|---------------|---------------|--------------|-------------|--------------|------|----------------|-----------------|------------------|-------------------|----------------------|------------|-------------|-------------|-----|---|
|                       |                 | App. lotal   |  | -        |          | 41            | 61            | 43           | 200         | 5            |      | .783           | 173             | 2 6              | 90.08             | <u></u>              | ď          | ) (         | ົນ          | 20  | ì |
|                       | 2000            | SDAL   |  |          | Ó        | >             | 0             | 0            |             | > 0          | 0    | 000.           | C               | > <              | > 1               | 0                    | C          | ) (         | >           | C   | ) |
| Route 155             | 40 -            | רפון   |  |          | C        | <b>&gt;</b>   | 0             | 0            |             | 0 0          | 0    | 000.           | C               | ) C              | <b>)</b> (        | 0                    | С          |             | >           | C   | , |
| ĕű                    | 1 -             | 0  |  | (N)      | ć        | 30            | 47            | 30           | 150         | 10.0         | 0.6  | 608.           | 139             | 2 5              | t                 | 10                   | 6.6        | , (         | n           | 2.0 |   |
|                       | ţ               | and a  |  | A.       | ⊮ Li     | n ;           | 14            | 13           | 30          | 3 6          | 4.07 | 969.           | 34              | 07.0             |                   | מי                   | 7.7        | c           | 7           | 5.7 |   |
|                       | App. Total      | pp. rotal  |  |          | C        | <b>&gt;</b> ( | <b>&gt;</b>   | 0            | c           | )            | 000  | 000            | C               | · C              |                   | >                    | 0          | c           | >           | 0   | - |
| _ 0                   | Spec            | 1  |  |          | c        | <b>&gt;</b> 0 | >             | 0            | c           | · c          | 0 0  | 000.           | 0               | · C              | 0 0               | >                    | 0          | c           | > 1         | 0   |   |
| On-Ramp<br>Northbound | He I            |  |  |          | c        | > 0           | <b>&gt;</b> ' | 0            | С           | · C          | 2 6  | ono.           | 0               | C                | 0 0               | >                    | 0          | C           | ۰ د         | 0   |   |
| o <u>ջ</u>            | Thu             | -  |  |          | c        | <b>&gt;</b> C | > 0           | 0            | С           | · C          | 200  | 000.           | 0               | C                | ) c               | >                    | 0          | C           | <b>)</b> (  | 0   |   |
|                       | Right           | )  |  |          | C        | o c           | > 0           | Э            | 0           | · C          | 2 6  | ooo.           | 0               | C                | o c               | >                    | 0          | C           | 0 (         | >   |   |
|                       | App. Total      |  |  |          | 328      | 263           | 202           | 703          | 1088        |              | 000  | 670.           | 1058            | 97.2             | 70                | 17                   | 2.2        | ď           |             | 0.0 |   |
| - 73                  | Peds A          | -  |  |          | C        | o c           | 0 0           | 5            | 0           | C            | 000  | 200.           | 0               | 0                | · C               | ) (                  | 0          | C           | , c         | >   |   |
| oute 155<br>stbound   | Left            |  |  | 200      | 136      | 110           | 1 5           | 20           | 469         | 43.1         | 862  | 200.           | 458             | 97.7             | <del>,</del>      | - (                  | 2.3        | C           |             | >   |   |
| ž Š                   | Thru            | -  |  | 130      | 192      | 151           | - 7           | 54.          | 618         | 56.8         | 805  | 200            | 299             | 6.96             | 13                |                      | 7.         | ဖ           |             | -   |   |
|                       | Right           |  |  |          | 0        | C             | · •           | -            | τ-          | 0.1          | 250  | 201            | <del>,</del>    | 100              | C                 | ) (                  | >          | 0           | c           | >   |   |
|                       | op. Total       | 1 of 1   | 5  |          | 143      | 157           | 150           | 700          | 009         | n e se e un  | 955  | 000            | 288             | 98.0             | -                 | . 0                  | 0          | <del></del> | 0           | 4.  |   |
| g                     | Peds App. Total | AM - Peak  | 30 AM  |          | 0        | С             | · c           | 0            | >           | 0            | 000  |                | >               | 0                | 0                 | c                    | ) (        | 0           | c           | )   |   |
| Southbound            | Left            | 0 08:45  | ins at 07  | 91       | 81       | 83            | 8             | 100          | 347         | 57.8         | .953 | 700            | 227             | 97.1             | 0                 | 20                   | ,          | <b>,</b>    | α<br>Ο      | )   |   |
| Sol                   | Thru            | 7:00 AM 1  | ction Bec  | 9        | 4        | 12            | σ             | , 40         | 2           | 5.5          | .646 | 70             | - (             | 100              | 0                 | C                    | 0          | >           | C           | )   |   |
| and the second        | Right           | s From 0   | re Interse   | 51       | 28       | 56            | 57            |              | 777         | 37           | .957 | 220            | 0.22            | 99.1             | 7                 | o<br>C               | 9          | >           | С           | •   |   |
|                       | Start Time      | Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1 | beak Hour for Entire Intersection Begins at 07:30 AM | 07:30 AM | 07:45 AM | 08:00 AM      | 08:15 AM      | Total Volumo | oral volume | % App. Total | 품    | Dacconder Care | assertiger Cars | % Passenger Cars | SU Trucks & Buses | % SH Toucke & During | A I Tailor | MO HUCKS    | % MU Trucks |     |   |

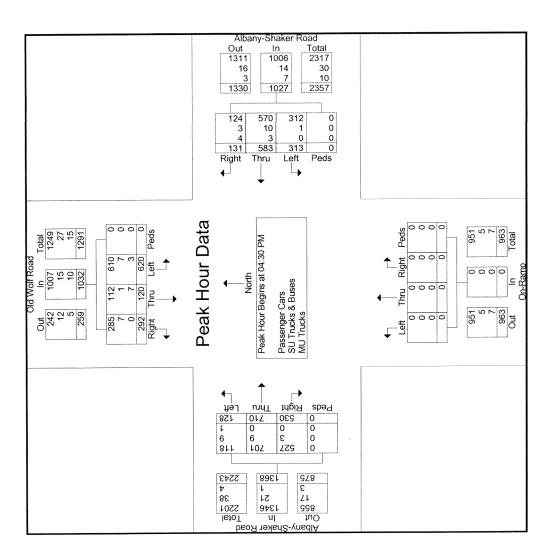
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> Old Wolf Road & Albany Shaker Road Exit 3/Exit 4

4 to 6 PM

Site Code : 12345678 Start Date : 1/27/2009 Page No : 4

File Name: Albany Shaker Road & Old Wolf Road PM



4 to 6

Exit 3/Exit 4 Old Wolf Road & Albany Shaker Road PM

File Name: Albany Shaker Road & Old Wolf Road PM Site Code: 12345678
Start Date: 1/27/2009
Page No: 1

|   |   | Same same source sources | Int. Total      | 826      | 770      | 846      | 817      | 3259  | 868      | 896      | 797      | 277      | 3337  | 6596        |          |         |                | 98               | 102               | 1.5                 | 99        | 0.5         |
|---|---|--------------------------|-----------------|----------|----------|----------|----------|-------|----------|----------|----------|----------|-------|-------------|----------|---------|----------------|------------------|-------------------|---------------------|-----------|-------------|
|   | ***********                             |                          | App. Total      | 282      | 272      | 330      | 320      | 1204  | 332      | 386      | 299      | 262      | 1279  | 2483        |          | 37.6    |                | 98.3             | 33                | 1.6                 | 4         | 0.2         |
|   | Road                                    | g                        | Peds /          |          | ***      | 0        | 0        | 2     | 0        | 0        | 0        | 0        | 0     | 2           | 0.1      | 0       |                | 100              | 0                 | 0                   | 0         | 0           |
|   | Albany-Shaker Road                      | Eastbound                | Left            | 23       | 27       | 58       | 27       | 106   | 28       | 44       | 23       | 21       | 116   | 222         | 8.9      | 3.4     |                | 89.6             | 21                | 9.5                 | 2         | 6.0         |
|   | Albany                                  | Ë                        | Thru            | 143      | 156      | 171      | 179      | 649   | 163      | 197      | 148      | 150      | 658   | 1307        | 52.6     | 19.8    |                | 98.9             | 13                | <b></b>             | ~         | 0.1         |
|   |   |                          | Right           | 115      | 88       | 130      | 114      | 447   | 141      | 145      | 128      | 91       | 505   | 952         | 38.3     | 14.4    |                | 99.4             | S                 | 0.5                 | -         | 0.1         |
|   |   |                          | App. Total      | 0        | 0        | 0        | 0        | 0     | 0        | 0        | 0        | 0        | 0     | 0           |          | 0       |                | 0                | 0                 | 0                   | 0         | 0           |
| <b>Trucks</b>   |   | ס                        | Peds Ap         | 0        | 0        | 0        | 0        | 0     | 0        | 0        | 0        | 0        | 0     | 0           | 0        | 0       |                | 0                | 0                 | 0                   | 0         | 0           |
| N - Si  | On-Ramp                                 | Northbound               | Left            | 0        | 0        | 0        | 0        | 0     | 0        | 0        | 0        | 0        | 0     | 0           | 0        | 0       |                | 0                | 0                 | 0                   | 0         | 0           |
| & Buse  | Ō                                       | Š                        | Thru            | 0        | 0        | 0        | 0        | 0     | 0        | 0        | 0        | 0        | 0     | 0           | 0        | 0       |                | 0                | 0                 | 0                   | 0         | 0           |
| J Trucks  |   |                          | Right           | 0        | 0        | 0        | 0        | 0     | 0        | 0        | 0        | 0        | 0     | 0           | 0        | 0       |                | 0                | 0                 | 0                   | 0         | 0           |
| inted- Passenger Cars - SU Trucks & Buses - MU Trucks |   |                          | App. Total      | 277      | 263      | 263      | 256      | 1059  | 259      | 249      | 288      | 273      | 1069  | 2128        |          | 32.3    |                | 98.1             | 53                | 4.1                 | 12        | 9.0         |
| ssenger   | Road                                    | þ                        | Peds            | 0        | 0        | 0        | 0        | 0     | 0        | 0        | 0        | 0        | 0     | 0           | 0        | 0       |                | 0                | 0                 | 0                   | 0         | 0           |
| ited-Pag  | ny-Shaker Road                          | Vestbound                | Left            | 92       | 64       | 9/       | 20       | 302   | 96       | 71       | 71       | 22       | 295   | 297         | 28.1     | 9.1     |                | 98.8             | ည                 | 0.8                 | 2         | 0.3         |
| <b>Groups Prin</b>                                    | Albany                                  | ≥                        | Thru            | 155      | 167      | 152      | 158      | 632   | 137      | 136      | 167      | 174      | 614   | 1246        | 58.6     | 18.9    |                | 98.4             | 17                | 1.4                 | က         | 0.2         |
| Gro   | *************************************** | ;                        | Right           | 30       | 32       | 35       | 28       | 125   | 56       | 42       | 20       | 42       | 160   | 285         | 13.4     | 4.3     |                | 95.1             | 7                 | 2.5                 | 7         | 2.5         |
|   |   |                          | Peds App. Total | 267      | 235      | 253      | 241      | 966   | 277      | 261      | 210      | 241      | 686   | 1985        |          | 30.1    |                | 97.6             | 34                | 1.7                 | 14        | 0.7         |
|   | oad                                     | nd                       | Peds            | 0        | 0        | 0        | 0        | 0     | 0        | 0        | 0        | 0        | 0     | 0           | 0        | 0       |                | 0                | 0                 | 0                   | 0         | 0           |
|   | Old Wolf Road                           | Southbound               | Left            | 160      | 154      | 141      | 152      | 209   | 166      | 161      | 133      | 156      | 616   | 1223        | 61.6     | 18.5    |                | 98.6             | -                 | 6.0                 | 9         | 0.5         |
|   | PO                                      | So                       | Thru            | 31       | 16       | 30       | 23       | 100   | 4        | 26       | ∞        | 19       | 94    | 194         | 8.6      | 2.9     |                | 94.3             | 4                 | 2.1                 | _         | 3.6         |
|   |   |                          | Right           | 76       | 65       | 82       | 99       | 289   | 70       | 74       | 69       | 99       | 279   | 568         | 28.6     | 8.6     |                | 96.5             | 19                | 3.3                 | _         | 0.2         |
|   |   |                          | Start Time      | 04:00 PM | 04:15 PM | 04:30 PM | 04:45 PM | Total | 05:00 PM | 05:15 PM | 05:30 PM | 05:45 PM | Total | Grand Total | Apprch % | Total % | Passenger Cars | % Passenger Cars | SU Trucks & Buses | % SU Trucks & Buses | MU Trucks | % MU Trucks |

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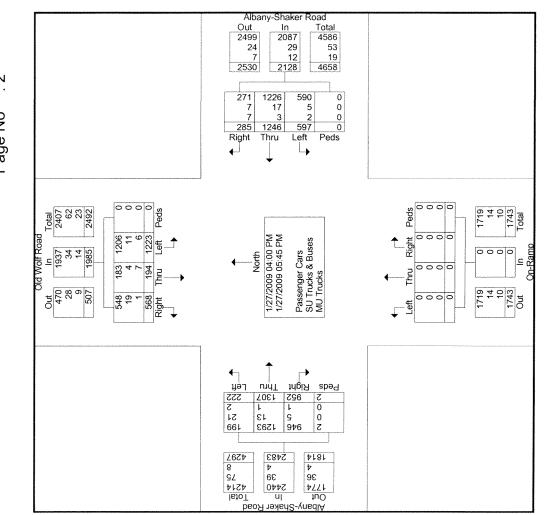
Exit 3/Exit 4 Old Wolf Road & Albany Shaker Road

PM

4 to 6

: 1/27/2009 : 2 Site Code : 12345678 Start Date Page No

File Name: Albany Shaker Road & Old Wolf Road PM



Exit 3/Exit 4 Old Wolf Road & Albany Shaker Road

4 to 6 PM

File Name: Albany Shaker Road & Old Wolf Road PM Site Code: 12345678
Start Date: 1/27/2009
Page No: 3

|  |            | ŏŏ          | Old Wolf Road<br>Southbound | toad      |                     |          | Albany-<br>We | -Shaker Road<br>estbound | Road     |           | AND | ō Ş        | On-Ramp     | 7    |   | COMPANY AND A STATE OF THE STAT | Albany   | Mbany-Shaker Road | Road     |           |           |
|--|------------|-------------|-----------------------------|-----------|---------------------|----------|---------------|--------------------------|----------|-----------|---|------------|-------------|------|---|--|----------|-------------------|----------|-----------|-----------|
| Start Time   | Right      | Thru        | Left                        | Peds      | Left Peds Ann Total | Right    | Thru          | l off                    | Dade     | Ann Total | tq zio                                  | 5          | 900         | 1    |   |  | i Li     | Eastbound         |          |           |           |
|  |            | -           |                             |           | man iddi.           | in .     | 3             | į                        |          | pp cdd    | 300                                     | 2          | Lei<br>Lei  | Leds | App. Total                              | TOY.   | 2        | eff               | Peds     | Ann Total | Int Total |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1 | is From (  | 04:00 PM    | to 05:45                    | 5 PM - Pe | ak 1 of 1           |          |               |                          |          |           |   |            |             |      |   |  |          | -                 |          | - Add     | 1000      |
| Peak Hour for Entire Intersection Begins at 04:30 PM       | ire Inters | ection Be   | ains at C                   | 14:30 PM  |                     |          |               |                          |          |           |   |            |             |      |   |  |          |                   |          |           |           |
| 04:30 PM   | 82         | 4           |                             |           |                     | 7        | 150           | I have                   |          | 6         |   |            |             |      | ~                                       | 4  |          | 4                 |          |           |           |
| NG 21.40   | U U        | )<br>}<br>} | , T                         | c         | 7                   | } (      |               | 9 1                      | ,        | 202       |   |            |             |      |   | ~<br>~   |          | 2                 |          |           |           |
| 12 000   | 2 1        | 62          | 70                          | >         | 747                 | 28       | 158           | 9                        | 0        | 256       | 0                                       | 0          | 0           | 0    | 0                                       | 114  | 179      | 27                | C        | 320       | 217       |
| MH 00:50   | 2          | 4           | 166                         | 0         | 277                 | 56       | 137           | 96                       | C        | 259       | C                                       | c          | c           | C    |   |  |          | ic                | ) (      | 040       | - 0       |
| 05:15 PM   | 74         | 26          | 161                         | C         | 261                 | Ş        | 100           | 7 (                      | 0 0      | 3 6       | 0 0                                     | > (        | ، د         | >    | >                                       | 4  | 503      | 78                | >        | 332       | 868       |
| Total Value  |            | 5 6         | 2 0                         |           | 107                 | 74       | 130           | - /                      | 0        | 748       | Э                                       | 0          | 0           | 0    | 0                                       | 145  | 197      | 44                | 0        | 386       | 896       |
| oral voiding   | 767        | 120         | 070                         | 0         | 1032                | 131      | 583           | 313                      | 0        | 1027      | 0                                       | C          | c           | c    | c                                       | 530  | 710      | 10g               | c        | 4300      | 2010      |
| % App. Total   | 28.3       | 11.6        | 60.1                        | 0         |                     | 12.8     | 56.8          | 30.5                     | <b>C</b> |           | · C                                     | · C        | o c         | o c  | )                                       | 1 (  | 2.7      | 0 7               | > 0      | 0000      | 2471      |
| Ή  | 890        | 732         | 934                         | 000       | 031                 | 780      | 000           | 140                      | 000      | 010       |   | 0 00       |             | ٥    | *************************************** | 50.7   | ى<br>ا.ك | 4.                | >        |           |           |
|  | 200        |             |                             | 000       | - 000               | 20       | .326.         | 510.                     | ODO:     | 3/0       | oon.                                    | 000.       | 000.        | 000. | 000                                     | 914  | .901     | .727              | 000      | 886       | 956       |
| rasseriger Cars  | 7007       | 7           | 2.0                         | >         | 1007                | 124      | 220           | 312                      | 0        | 1006      | 0                                       | C          | С           | c    | c                                       | 507  | 704      | 4+2               | C        | 4340      | Cucc      |
| % Passenger Cars   | 97.6       | 93.3        | 98.4                        | 0         | 97.6                | 7.46     | 97.8          | 2 66                     | C        | 0 80      | · C                                     | · C        | ) C         | o c  | o c                                     | 3 8  | - 1      | 2 0               | > 0      | 040       | 2538      |
| SH Trucks & Buses  | 7          | +           | 7                           | c         | T.                  |          | , ,           |                          | 0 0      | ;;        | > 0                                     | ، د        | <b>&gt;</b> | >    | >                                       | 4.66   | 98.7     | 7.76              | 0        | 98.4      | 98.0      |
|  | · •        | - o         | - 4                         | 0         | 2 ,                 | က (      | 2 !           | ,                        | >        | 4         | 0                                       | 0          | 0           | 0    | 0                                       | က  | တ        | თ                 | 0        | 21        | 20        |
| % SO Indexs & Buses  | 4.7        | 0.0         | -                           | 0         | J.5                 | 2.3      | 1.7           | 0.3                      | 0        | 4.        | 0                                       | 0          | 0           | C    | C                                       | 90   | 4.       | 7.0               | C        | 4         | . 4       |
| MU Irucks  | 0          | _           | ო                           | 0         | 10                  | 4        | ď             | _                        | c        | 7         | c                                       | · C        |             | 0 (  | 0 0                                     | 9  | 5 0      |                   | <b>)</b> |           | <br>      |
| % MU Trucks  | C          | ις          | ر<br>بر                     | · C       |                     | . 4      | ) L           | 0                        | 0 0      | - 1       | > 0                                     | <b>o</b> 1 | >           | >    | )                                       | >  | 0        | _                 | 0        | <b>~</b>  | 9         |
|  | >          | )           | 9                           | >         | -<br>-<br>-         | ٠.<br>د. | 0.0           | >                        | >        | <br>``    | 0                                       | 0          | 0           | 0    | 0                                       | 0  | 0        | 0.8               | 0        | 0.1       | C 5.      |
|  |            |             |                             |           |                     |          |               |                          |          |           |   |            |             |      | -                                       |  |          |                   | ,        | ;         | 9         |

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File Name: Albany Shaker Road & Wolf Road PM

Site Code : 01270982 Start Date : 1/27/2009

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Page No

Exit 3/Exit 4

Albany Shaker Road & Wolf Road ΡM

4 to 6

Albany-Out 1171 2 2 2 1175 In 1151 5 1 1157 0 0 0 0 Peds 335 2 0 337 Left 309 2 0 311 Right 1 1 509 Thru Peak Hour Data 0000 2636 Total Total 1323 5 0 1328 Peak Hour Begins at 04:45 PM 0000 1807 5 5 1817 In Passenger Cars SU Trucks & Buses MU Trucks 0000 813 6 0 819 Out Out 1323 5 0 0 1328 Left 490 3 4 4 497 Right 0000 478 0 482 482 Aight 322 322 323 0 0 0 0 2 1 058 undT Variable 1006 | 1354 | 2360 | 1364 | 2343 | 1346 | 2343 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 | 1346 |

> Exit 3/Exit 4 Albany Shaker Road & Wolf Road ₽

4 to 6

File Name: Albany Shaker Road & Wolf Road PM Site Code: 01270982 Start Date: 1/27/2009 Page No: 1

|  |            | 1-4-7-4-1       | Int. lotal | 1047     | 1001          | 1001        | 1042     | 1090  | 4210 | :        | 1044     | 1149               | 1045      | 906       | 4233  |             | 8443        |         | The state of the s |                  | 99.5              | 33                    | ) <                 | t.         | 13            | (      |
|--|------------|-----------------|------------|----------|---------------|-------------|----------|-------|------|----------|----------|--------------------|-----------|-----------|-------|-------------|-------------|---------|--|------------------|-------------------|-----------------------|---------------------|------------|---------------|--------|
| Manadespersonal annual surround  |            | }               | Арр. готаг | 299      | VCC           | 1000        | 308      | 333   | 1265 | 6        | 339      | 381                | 301       | 304       | 1325  |             | 2590        |         | 30.7   | (                | 39.5              | 10                    |                     | <b>t</b> ( | 7             | ····   |
| Road   | 9          | op od           | Laces      | 0        | C             | > <         | > 0      | 0     | 0    | (        | 0        | 0                  | 0         | · C       | 0     | (           | <b>&gt;</b> | 0       | 0  | c                | >                 | 0                     | _                   | 0          | >             | c      |
| Albany-Shaker Road   | Eastbound  | #40-            | רמו        | 86       | 09            | 1 (0)       | 2 3      | 40    | 289  | ,        | 5        | 83                 | 64        | 74        | 332   | Č           | 1.70        | 24      | 7.4  | ć                | 99.Q              | ₩                     | 00                  | 3 (        | 0             | c      |
| Albany   | ш          | Thai            | 2          | 115      | 136           | 5 6         | 5 5      | 200   | 539  | 7        | -        | 156                | 119       | 117       | 509   | 0           | 245         | 40.5    | 12.4   | (                | 38.0              | က                     | ~                   | 9          | 7             | c      |
| THE PARTY PROPERTY OF THE PARTY |            | tdoig           | 11600      | 98       | 119           | 0.0         | 2 7      |       | 437  | Š        | 7        | 132                | 118       | 113       | 484   | 2           | 176         | 35.6    | 10.9   | 6                | 33.0              | ဖ                     | 0.7                 |            | <b>&gt;</b>   | c      |
| V C V C V C V C V C V C V C V C V C V C  |            | Ann Total       |            | 473      | 446           | 175         | 7 4      | 408   | 1863 | 700      | 423      | 468                | 451       | 404       | 1752  | 0 7         | 000         | 9       | 47.8   | ç                | 4.66              | <u></u>               | 40                  |            | D (           | _<br>C |
|  | <u>0</u>   | Peds            |            | >        | 0             | · C         | o c      | 0     | >    | c        | ۰ د      | 0                  | 0         | 0         | 0     | c           | > 0         | > 0     | >  | c                | 0                 | 0                     | 0                   | c          | <b>&gt;</b> ( | _      |
| Albany-Shaker Road Wolf Road   | Northbound | He H            |            | 143      | 154           | 139         | 120      | 27.0  | 202  | 105      | 2 .      | 124                | 119       | 114       | 482   | 1047        | ÷ c         | 2 6     | 4.21   | α                | 0.0               | _                     | 0.7                 | u          | 0             | 2      |
| ≥ :  | S          | Thru            | 7170       | 1/0      | 151           | 187         | 122      | 7/1   | 000  | 160      | 2 1      | 32                 | 178       | 126       | 649   | 1335        | 3 6         | 0. u    | 0.0  | 9 00             | 5                 | Ω                     | 4.0                 | -          | - •           | -      |
|  |            | Right           | 727        | 134      | 141           | 149         | 168      | 2 2   | 710  | 144      | - 1      | 60                 | 154       | 164       | 621   | 1233        | 27.7        | - 4     | 5.   | 900              | 5 7               | _                     | 0.1                 | 2          | 1 (           | `      |
|  |            | App. Total      | 275        | 6/7      | 261           | 258         | 288      | 2007  | 7001 | 276      | 0 0      | 2000               | 293       | 287       | 1156  | 223R        | 2           | 26.5    | 20.0   | 99.5             | 200               | 2                     | 4.0                 | 2          | 7 7           | ~ .    |
| Road   |            | Peds Ac         | l          | <b>.</b> | 0             | <del></del> | c        | , ,   | _    | c        | , (      | <b>&gt;</b> 0      | 0         | 0         | 0     | -           |             | o c     | >  | 100              |                   | <b>&gt;</b> (         | 0                   | c          | ) C           | -      |
| -Shaker Road   | estponud   | Left            | 7.3        | 2 (      | 83            | 63          | 84       | 303   |      | 26       | 0 1      | 9 0                | 8         | 8         | 343   | 646         | 28.0        | 7.7     |  | 99.5             | 2                 | ۱ c                   | 0.5                 | С          | · c           | -      |
| Albany-  | We         | Thru            | 130        | 2 ,      | -             | 133         | 117      | 101   | 2    | 126      | 107      | <del>+</del> 7 + 7 | 142       | 127       | 519   | 1010        | 45.1        | - 6     | 1  | 99.3             |                   | ) נ                   | 0.5                 | 2          | 0             | 7.7    |
|  |            | Right           | 7.2        | 1 1      | /9            | 61          | 87       | 287   | 5    | 53       | o o      | 9 6                | 5         | 02        | 294   | 581         | 26          | 69      |  | 99.7             | 0                 | 1 (                   | 0.3                 | 0          | C             | >      |
|  |            | b. Total        | C          |          | <u> </u>      | 0           | 0        | C     | >    | 0        | C        |                    | <br>      | 0         | <br>> | 0           |             | C       | ,  | 0                | c                 | 0 0                   | O                   | 0          | C             | >      |
| _  |            | Peds App. Total | C          |          | >             | 0           | 0        | c     | ,    | 0        | C        | o c                | > 0       | 0         | >     | 0           | 0           | 0       |  | 0                | c                 | ) C                   | >                   | 0          | C             | )      |
| On-Ramp  |            | Left            | c          |          | >             | 0           | 0        | С     |      | 0        | C        | · c                | 0 0       | <b>D</b>  | )     | 0           | 0           | 0       | - Control of the Cont | 0                | С                 | ) C                   | >                   | 0          | 0             | ,      |
| Ö  | 3          | Thru            | 0          | _        | ۰ د           | 0           | 0        | 0     |      | 0        | C        |                    | 0 0       | > 0       | >     | 0           | 0           | 0       | -  | 0                | 0                 | · C                   | <b>5</b>            | 0          | 0             | ,      |
|  | -          | Right           | 0          | C        | <b>&gt;</b> ( | 0           | 0        | 0     |      | 0        | 0        | C                  | 0 0       | > 0       | >     | 0           | 0           | 0       | TATOLOGY STANSON STANS | 0                | 0                 | C                     | > 0                 | >          | 0             |        |
|  | +          | Start Time      | 04:00 PM   | 04-15 PM | N 000         | 04:30 PM    | 04:45 PM | Total | -    | 05:00 PM | 05:15 PM | 05:30 PM           | 05:45 DA4 | M L Ot.CO | Ora   | Grand Total | Apprch %    | Total % | Passenger Cars   | % Passenger Cars | SU Trucks & Buses | CIT Terology 9 Danses | % SO ITUCKS & BUSES | MO I NOKS  | % MU Trucks   | -      |

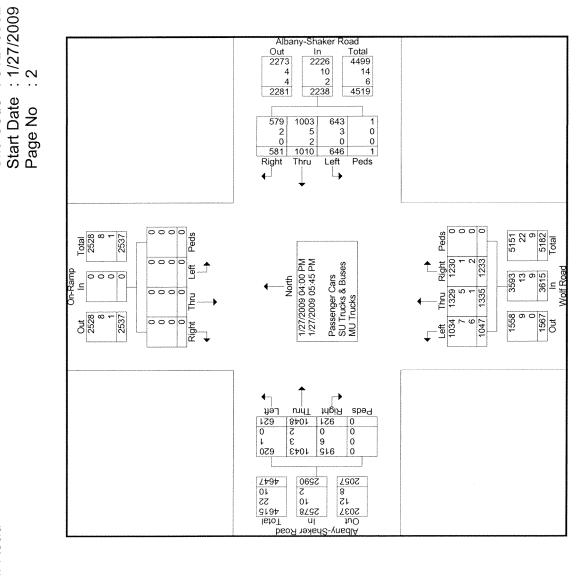
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File Name: Albany Shaker Road & Wolf Road PM Site Code: 01270982

: 1/27/2009 : 2

Albany Shaker Road & Wolf Road Exit 3/Exit 4

4 to 6



Exit 3/Exit 4 Albany Shaker Road & Wolf Road 4 to 6 PM

File Name: Albany Shaker Road & Wolf Road PM Site Code: 01270982 Start Date: 1/27/2009 Page No: 3

| The second secon |             | ွင္တ     | On-Ramp<br>Southbound | pu<br>Jud            |          |       | Albany.<br>We | -Shaker Road setbound | Road   |                 | Wild Address of the Control of the C | ≥ S     | Wolf Road | - T  |            |       | Albany   | Ibany-Shaker Road | Road          |            |  |
|--|-------------|----------|-----------------------|----------------------|----------|-------|---------------|-----------------------|--------|-----------------|--|---------|-----------|------|------------|-------|--|-------------------|---------------|------------|--|
| Start Time   | Right       | Thru     | Left                  | Left Peds App. Total | . Total  | Right | Thru          | the th                | Peds A | Ann Total       | thoio  | 1 1 1   | 40        | 0000 | ŀ          | i     | - L  | Eastbound         | _             |            |  |
| Dook Hour Andly  | , L. T.     | 000      |                       |                      | -        | ,     |               |                       |        | ייים            | 1000   | 2       | į<br>Į    | SDAL | App. lotal | E G   | 2  | Let               | Peds /        | App. Total | Int. Total   |
| reak mout Attalysis From 04:00 PM to 05:45 PM - Peak 1 of 1  | IS From C   | 4:00 PM  | to 05:45              | PM - Peak            | 1 of 1   |       |               |                       |        |                 |  |         |           |      | 7          |       | - Constitution of the Cons |                   |               |            |  |
| Peak Hour for Entire Intersection Begins at 04:45 PM   | ire Interse | ction Be | gins at 0             | 4:45 PM              |          |       |               |                       |        |                 |  |         |           |      |            |       |  |                   |               |            |  |
| 04:45 PM   | 0           | 0        | 0                     | C                    | <u></u>  | 87    | 117           | ά                     | c      | 000             | 9  | 7       | 9         |      | 1          |       |  |                   |               |            |  |
| 05.00 PM   | C           | C        |                       | · c                  | · (      | 5 6   | - (           | † I                   | > 0    | 007             | 00   | 1 6 600 | 671       |      | 469        |       | 158  | J                 |               | ****       |  |
| 00:30<br>00:40   | 0 0         | 0        | <b>o</b> (            | > <                  | <br>> ·  | ဂ     | 071           | <i>)</i> 6            | >      | 576             | 144  | 160     | 125       | 0    | 429        | 121   | 117  | 101               | C             | 330        | 1044   |
| 00.10 PIM  | <b>&gt;</b> | >        | >                     | 0                    | 0        | 98    | 124           | 78                    | 0      | 300             | 159  | 185     | 124       | C    | 468        | 132   | 176  | 03                | · c           | 000        | 1 7 7 7  |
| 05:30 PM   | 0           | 0        | 0                     | 0                    | C        | 73    | 142           | 78                    | c      | 203             | 747  | 170     |           | ) (  | 2 5        | 1 0   | 2 7  | ) ·               | <b>&gt;</b> • | 200        |  |
| Total Volume   | c           | C        |                       |                      |          | 24.0  |               | 000                   |        | 207             | t   0  | 0/1     | מ         | >    | 451        | 118   | 119  | 4                 | 0             | 301        | 1045   |
| % Ann Total  | 0 0         | > 0      | 0 0                   | <b>&gt;</b> (        | >        | - 1   | 806           | 33/                   | 0      | 1157            | 625  | 695     | 497       | 0    | 1817       | 482   | 550  | 322               | С             | 1354       | 4328   |
| % App. Total   | 0           | Э        | 0                     | 0                    |          | 26.9  | 44            | 29.1                  | 0      |                 | 34.4   | 38.2    | 27.4      | c    |            | 35.6  | 907  | 0000              | 0 0           |            | 010  |
| HA HA  | 000         | 000      | 000                   | 000                  | 000      | 793   | 896           | 869                   | 000    | 061             | 030  | 020     |           | 0    | 000        | 20.00 | 0.00   | 23.0              | 2             |            | STREET, STREET |
| Passenger Cars   | C           | C        |                       |                      |          | 000   | .000          | 500                   | 200    | 100.            | 000  | 808.    | 305       | 000. | SOS.       | 513.  | 0/8:   | 797               | 000.          | 888        | .942   |
|  | ) (         | 0 0      | 0                     | <b>o</b> (           | <br>O (  | 503   | 000           | 222                   | >      | LCL             | 624  | 693     | 490       | 0    | 1807       | 478   | 547  | 321               | a             | 1346       | 4304   |
| % Passenger Cars   | <b>O</b>    | >        | 0                     | >                    | 0        | 99.4  | 9.66          | 99.4                  | 0      | 99.5            | 8.66   | 99.7    | 98.6      | C    | 7 66       | 000   | 00   | 7 00              | · C           | ¥ 00       |  |
| SU Trucks & Buses  | 0           | 0        | 0                     | 0                    | 0        | 7     | ₹             | ^                     | C      | ĸ               | c  | C       |           | ) C  | )          | 1.00  | )  | 7.00              | > 0           | 4.1        | 4,88   |
| % S11 Tenrike & Buses  | C           | C        | C                     | c                    | C        | (     |               | 1 (                   | 0 (    | ) ,             | ۰ د  | 1       | כ         | >    | n          | 4     | V  |                   | 0             | /          | 17   |
| AAL Talons   | 0 0         | 0 0      | 0 (                   | > 0                  | <b>)</b> | 0.0   | 7.7           | 0.0                   | >      | 4.0             | 0  | 0.3     | 9.0       | 0    | 0.3        | 0.8   | 0.4  | 0.3               | С             | 5          | 0.4  |
| INIO LICKS   | >           | 0        | >                     | >                    | 0        | 0     | <del>-</del>  | 0                     | 0      | _               |  | C       | 4         | C    | Ľ          | C     | 7  | , (               | ) (           | ) •        | † #  |
| % MU Trucks  | 0           | C        | C                     | C                    | C        | C     | 0             | c                     |        |                 | - (  | •       | F (       | ) (  | י כ        | >     | -  | >                 | >             |            | `  |
| i  |             | ,        | )                     | •                    | )        | >     | 7.0           | >                     | >      | <br>-<br>-<br>- | 0.7  | 0       | ω.Ο       | 0    | 0.3        | 0     | 0.2  | 0                 | 0             | 0.1        | 00   |
|  |             |          |                       |                      |          |       |               |                       |        |                 |  |         |           |      |            |       |  |                   | ,             |            | !  |

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Exit 3/Exit 4 Exit 4 NB Off-Ramp PM 4-6

File Name: Exit 4 NB Off-Ramp PM

: 1/27/2009

4

Start Date : Page No :

Site Code : 00000000

> Exit 3/Exit 4 Exit 4 NB Off-Ramp PM 4-6

File Name: Exit 4 NB Off-Ramp PM Site Code: 000000000

Start Date : 1/27/2009 Page No : 1

|  | F          | int. iotal | 132      | 170      | 123           | 180           | 605         |          | 149      | 134         | 130           | 178               | 591         |             | 1196          |               |  | 6                | 98.3              | 10                  | 00           | 5           | 2 0            |
|--|------------|------------|----------|----------|---------------|---------------|-------------|----------|----------|-------------|---------------|-------------------|-------------|-------------|---------------|---------------|--|------------------|-------------------|---------------------|--------------|-------------|----------------|
|  | ·          |            | 132      | 170      | 123           | 180           | 605         |          | 149      | 134         | 130           | 178               | 591         |             | 1196          |               | 100  | 0                | 98.3              | 10                  | 0.8          | 104         | _ o            |
| Ramp   | 2544       |            | 0        | 0        | 0             | 0             | 0           | c        | >        | 0           | 0             | 0                 | 0           | C           | Э.            | 0             | 0  | (                | 5                 | 0                   | 0            | C           | <b>&gt;</b> C  |
| Exit 4 NB Off-Ramp   | 40         | רעוו       |          | 127      | 06            | 134           | 462         | 4        | 901      | 88          | 94            | 132               | 420         | Ċ           | 288           | /3.7          | 73.7   | Š                | 30.1              | 7                   | 0.8          | 10          | - <del>-</del> |
| Exit 4   | That       | 7.         | 0        | 0        | 0             | 0             | 0           | c        | >        | 0           | 0             | 0                 | 0           | c           | <b>&gt;</b> ( | <b>)</b>      | 0  | <                | 0                 | 0                   | 0            | _           | o c            |
|  | 200        | 11.6       | 21       | 43       | 33            | 46            | 143         | ç        |          | 46          | 36            | 46                | 171         | 7           | 4 6           | 26.3          | 20.3   | S                | 88                | m                   | <del></del>  | C           | o c            |
|  | Ann Total  | App. Lotal | 0        | 0        | 0             | 0             | 0           | C        | >        | 0           | 0             | 0                 | 0           | c           | >             | •             | 0  | c                | 0                 | 0                   | 0            | c           | ) C            |
| pu pu  | Other      | -          | 0        | 0        | 0             | 0             | 0           | c        | > (      | 0           | 0             | 0                 | 0           | c           | 0             | > 0           | O  | c                |                   | >                   | 0            | C           | 0              |
| Northbound   | fall       |            | >        | 0        | 0             | 0             | 0           | c        | > 0      | )           | 0             | 0                 | 0           | c           | 0             | > 0           | >  | c                |                   | >                   | 0            | С           | 0              |
| 5  | Thru       | -          |          |          | 0             |               | 0           | c        | 0        | <b>&gt;</b> | 0             | 0                 | 0           | c           | 0             | <b>&gt;</b> C | >  | C                |                   | )<br>               | 0            | C           | 0              |
|  | Raht       | 1          |          |          | 0             |               | 0           | -        |          | <b>-</b>    |               |                   | 0           | C           |               | <b>&gt;</b> C |  | _                |                   |                     |              |             | 0              |
| Westbound  | App. Total |            | , ,      | J        | 0             | ٥             | 0           | c        | •        | ) (         | <b>&gt;</b> • | 0                 | 0           | C           | )             | c             |  | C                | 0                 | <b>O</b> (          | 0            | 0           | 0              |
| pun  | Other      |            |          |          | 0             | 0             | 0           | C        | ) C      | 0 0         | 0 0           | ٥١٠               | 0           | C           | · C           | o c           | >  | C                | 0                 | 0                   | О            | 0           | 0              |
| Westbound  | Left       |            |          | ) ·      |               |               | 0           | С        |          |             | <b>&gt;</b> 0 | The second second | <b>&gt;</b> |             |               | 0 0           | -  | 0                |                   | 0 0                 |              |             | 0              |
|  | Thru       |            |          |          |               |               | 0           | 0        |          |             |               |                   | )<br>)      | 0           |               |               |  | 0                |                   |                     |              |             | 0              |
| ANA DESCRIPTION OF THE PROPERTY OF THE PROPERT | Rght       |            |          | ~~~~     | ·             |               |             | _        | _        |             | **********    |                   |             |             |               |               |  | 0                |                   |                     |              |             | 0              |
|  | App. Total | )          |          | ,        | <b>)</b>      |               | <b>&gt;</b> | O        | _        | 0 0         | > <           |                   | >           | 0           |               | С             |  | 0                | C                 | , ,                 | )            | <b>&gt;</b> | 0              |
| pun  | Other      | 0          | o c      | > 0      | <b>)</b>      | 0             | >           | 0        | <u></u>  | o c         | > <           | 0 0               | >           | 0           | 0             | 0             | SVS1A Wassesser and an any or the sum of the | 0                | С                 | · C                 | 0            | >           | 0              |
| Southbound   | Left       | C          |          | > 0      | <b>&gt;</b> 0 | <b>&gt;</b> 0 | >           | 0        | С        | · C         | 0 0           | 0 0               | >           | 0           | 0             | 0             |  | 0                | О                 | · C                 | 0            | >           | 0              |
| S  | Thru       | 0          | · C      | 0 0      | > 0           | 0             | >           | 0        | О        | · c         | o c           | 0                 | >           | 0           | 0             | 0             |  | 0                | 0                 | C                   |              | >           | 0              |
|  | Rght       | 0          | C        | · ·      | > <           | 00            | >           | 0        | 0        | C           | · C           | )                 | >           | 0           | 0             | 0             |  | 0                | 0                 | C                   | 0            | >           | 0              |
|  | Start Time | 04:00 PM   | 04-15 PM | 04.30 PM | 04:30 - 10    | INIT C4:40    | Otal        | 05:00 PM | 05:15 PM | 05:30 PM    | 05.45 PM      | Total             |             | Grand Total | Apprch %      | Total %       | Passenger Cars   | % Passenger Cars | SU Trucks & Buses | % SH Tracks & Buspe | AAII Terrolo | 2001 014    | % MU Trucks    |

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File Name: Exit 4 NB Off-Ramp PM

: 00000000

Site Code

: 1/27/2009 : 2

Start Date : Page No

Exit 3/Exit 4 Exit 4 NB Off-Ramp

PM 4-6

> Exit 3/Exit 4 Exit 4 NB Off-Ramp PM 4-6

File Name: Exit 4 NB Off-Ramp PM Site Code: 000000000

: 1/27/2009 : 3 Start Date : Page No :

|   |                   |                   |                       | Ξ                                |
|---|-------------------|-------------------|-----------------------|----------------------------------|
|   |                   |                   | 1                     | p. lotal                         |
|   | amp               |                   |                       | Julei App                        |
|   | B Off-Ra          | tbound            | 40.                   | ie i                             |
|   | Exit 4 NB Off-Rar | T 38              | Thu.                  | 2                                |
|   |                   |                   | 100                   | 100                              |
|   |                   |                   |                       | ıaı                              |
|   |                   |                   | Ann Total             | ٠<br>بر<br>در                    |
|   | 7                 | 2                 | Other                 | 2                                |
| -                                       |                   |                   | di<br>di              |                                  |
|   | 2                 | 2                 | Thru                  |                                  |
| *************************************** |                   |                   | Raht                  | )                                |
|   |                   |                   | App. Total            |                                  |
|   |                   |                   | Other   Apr           |                                  |
|   | קייטק             | 5                 | Left                  |                                  |
| *************************************** | West              |                   |                       | -                                |
|   |                   |                   | ТŢ                    |                                  |
| -                                       |                   |                   | Rght                  |                                  |
|   |                   | CONTROL OF STREET | Left Other App. Total | 1 1 Of 1                         |
|   | 77                |                   | Other                 | DO.                              |
|   | outhbound         |                   | Left                  | 05.45                            |
|   | Sou               | L                 | 2                     | 14:00 PM to 05:45 PM - Dogs 1 of |
| 1                                       |                   |                   |                       | Z                                |

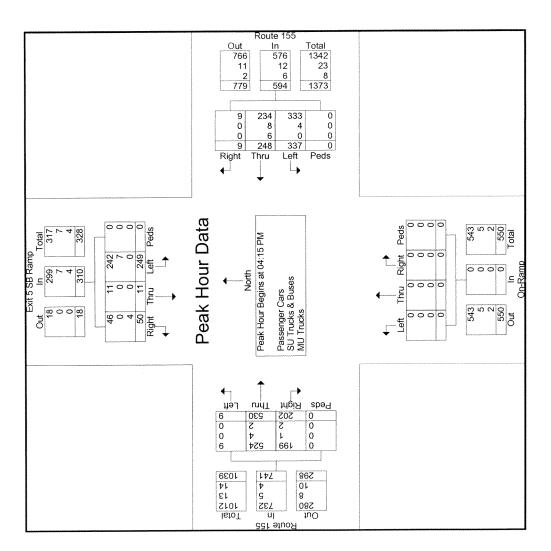
|  |                      | Int Total  |  |  |          | 170           | 123           | 180           | 149          | 622           | 1                                       |        | .864           | 613              | 989                    | 9                 | n                   | 0.5           |   | ٥             | 1.0      |
|--|----------------------|------------|--|--|----------|---------------|---------------|---------------|--------------|---------------|---|--------|----------------|------------------|------------------------|-------------------|---------------------|---------------|---|---------------|----------|
|  |                      | Ann Total  | יוטאר. ויטומו  |  | ٠        | 170           | 123           | 180           | 149          | 622           | )                                       |        | .864           | 613              | 986                    | 9                 | n                   | 0.5           | ( | ٥             | 1.0      |
| Ramp   | 7                    | Other      |  |  |          | 0             | 0             |               | 0            | 0             | ,                                       | 0      | 00.            | 0                | С                      | 0 (               | 0                   | 0             | C | >             | 0        |
| Exit 4 NB Off-Ram  |                      | 40         |  |  |          | 127           | 8             | 134           | 106          | 457           | 101                                     | 3.3    | .853           | 449              | 98.2                   | 1 (               | 7                   | 0.4           | Q | D             | 1.3      |
| Exit 4   | Ĭ                    | Thui       | 2  |  |          | 0             | 0             |               | 0            | 0             | (                                       | > !    | 000.           | 0                | 0                      |                   | >                   | 0             | c | >             | 0        |
|  |                      | Roht       |  |  |          | 43            | 33            | 46            | 43           | 165           | 20.0                                    | 0.07   | 768.           | 164              | 99.4                   | 7                 | -                   | 9.0           | c | <b>&gt;</b> ( | 0        |
|  |                      | Ann Total  |  |  | -        | 0             | 0             | 0             | 0            | 0             | A                                       | 000    | 999            | 0                | 0                      | c                 | >                   | 0             | c | ) (           | 0        |
|  |                      | Other An   | -  |  | ć        | <b>&gt;</b> ( | 0             | 0             | 0            | 0             | Ċ                                       |        | 000            | 0                | 0                      | c                 | ، د                 | 0             | _ | 0 0           | >        |
| Northbound   |                      | Left       |  |  | c        |               | <b>o</b> (    |               | i            |               |   |        |                |                  |                        |                   |                     | 0             | C | 0 0           | >        |
| No   |                      | 마다         |  |  | c        | > 0           | <b>o</b> 0    | <b>&gt;</b> ( |              | 0             |   |        |                |                  |                        |                   |                     | >             | C | o c           | >        |
|  | -                    | Rght       |  |  | c        | <b>&gt;</b> c | <b>&gt;</b> 0 | <b>&gt;</b> ( | 0            |               |   |        |                | >                |                        | C                 | ) (                 | >             | C |               | >        |
|  |                      | App. Total |  |  | c        | > 0           | > 0           | <u> </u>      | 5            | 0             |   | 000    | 000            | >                | 0                      | C                 |                     | <b>O</b>      | 0 |               | >        |
|  | -                    | Other App  |  |  | c        | > 0           | > 0           | > 0           | اد           | 0             | 0                                       | 00     | 2              | <b>&gt;</b> (    | 0                      | 0                 |                     | <b>&gt;</b> ( | 0 | c             | >        |
| estbound   | L                    | C          |  |  | c        | <b>&gt;</b> C | > 0           |               | 0            |               |   |        | 5              |                  | >                      | 0                 | · C                 | <b>&gt;</b> ( | > | <b>C</b>      | >        |
| Wes  |                      | =          |  |  | _        | o c           | > <           | > <           | 0            | <b>&gt;</b> ( | 0                                       | 000    | •              | > 0              | <b>&gt;</b>            | 0                 | c                   | o (           | > | c             | <b>o</b> |
|  | Ľ                    | 1100       |  |  | <b>C</b> | · c           | o c           | o c           | <b>&gt;</b>  | <b>&gt;</b> ( | 0                                       | 000    |                | > 0              | <b>&gt;</b> (          | 0                 | <b>C</b>            | 0 0           | > | c             | )        |
|  | _                    |            | of 1   |  | C        | · C           | · ·           | ) C           | > 0          | <br>>         |   | 000    |                | - c              | <b>)</b>               | 0                 | _                   | 0 0           | > | C             | _        |
| - Promon   | leff Other Ass Tatal | 7          | Peak 1   | D.W.   | 0        |               |               | · c           | > 0          | > 0           | >                                       |        | -              |                  | > 0                    | 5                 |                     |               | 5 | 0             | ,        |
| puno   | ft Other             |            | :45 PM -   | at 04:15   | 0        | . 0           |               |               | > <          | > 0           | <b>-</b>                                | 000    |                |                  | <b>.</b>               | _                 |                     |               | ) | 0             |          |
| Southbound   |                      | 3          | PM to 05   | Begins   | ,        | 0             | 0             |               | , ,          | o c           |   | 000.   |                | · c              |                        | 5                 | 0                   |               | 5 | 0             |          |
| A CONTRACTOR A CON | Thru                 |            | m 04:00  | ersection  | 0        | 0             | 0             | 0             | 0            | o c           | *************************************** | 000.   | 0              |                  | · ·                    | _                 | 0                   | _             |   | 0             |          |
|  | Roht                 | 9          | ılysis Fro   | Entire Int   |          | >             | >             | 5             | a            |               | -                                       | - 000. | S              |                  | ,                      | S                 | SS                  | U             |   | S             |          |
| THE PROPERTY OF THE PARTY OF TH | Start                |            | Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of | Peak Hour for Entire Intersection Begins at 04:15 PM | 04:15 PM | 04:30 PM      | 04:45 PM      | 05:00 PM      | Total Volume | % Ann Total   | A App. 1 Of                             | 出      | Passenger Cars | % Passenner Care | and lagging and lagger | SO Irucks & Buses | % SU Trucks & Buses | MIITrucks     |   | % MU Trucks   |          |

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> Watervliet Shaker Road & Exit 5 SB Exit 3/Exit 4

4 to 6

File Name: Watervliet Shaker Road & Exit 5 SB Ramp PM Site Code: 111111111 : 1/27/2009 Start Date : Page No :



Exit 3/Exit 4

Watervliet Shaker Road & Exit 5 SB PM

File Name: Watervliet Shaker Road & Exit 5 SB Ramp PM Site Code: 111111111 Start Date: 1/27/2009 Page No: 1

4 to 6

|                     |         |      |                |      |                 | Gro         | <b>Groups Prin</b> | ited-Pa  | ssender | nted-Passenger Cars - SU Trucks & Buses - MU Trucks | U Trucks | s & Buse | SS - MU    | Trucks   |  |  |           |             |   |  |
|---------------------|---------|------|----------------|------|-----------------|-------------|--------------------|--|---------|---|----------|----------|------------|--|--|--|-----------|-------------|---|--|
|                     |         | Exit | Exit 5 SB Ramp | amp  |                 |             | ~                  | toute 155  | 5       |   |          | 0        | On-Ramp    | AND THE RESIDENCE AND THE PARTY AND THE PART | The state of the s | market and the state of the sta | Route 155 | 55          |   |  |
|                     |         | Sc   | Southbound     | pu   |                 |             | >                  | estbound   | Þ       |   |          | Õ        | Northbound | þ  |  |  | Eastbound | JQ.         |   | Vannagemenn y ling den mannagemen skelde |
| Start Time          | Right   | The  | Left           | Peds | Peds App. Total | Right       | Thru               | Left   | Peds    | App. Total  | Right    | Thru     | Left       | Peds App. Total  | I Right  | nt Thru  | Left      | Peds        | App. Total                              | Int. Total                               |
| 04:00 PM            | 19      | 2    | 74             | 0    | 95              | -           | 57                 | 85   | 0       | 143   | 0        | 0        | 0          | 0  | 5  | and a second   | -         | 0           | 168                                     | 406                                      |
| 04:15 PM            | თ       | 5    | 70             | 0    | 84              | 5           | 69                 | 9/   | 0       | 150   | 0        | 0        | 0          |  |  |  | 3         | 0           | 147                                     | 381                                      |
| 04:30 PM            | 17      | -    | 53             | 0    | 7.1             | 2           | 22                 | 103  | 0       | 160   | 0        | 0        | 0          | 0  | 0  |  | 2         | 0           | 179                                     | 410                                      |
| 04:45 PM            | 12      | 4    | 68             | 0    | 84              | <del></del> | 69                 | 92   | 0       | 146   | 0        | 0        | 0          |  | ) 46   | 6 112  | 0         | 0           | 158                                     | 388                                      |
| Total               | 22      | 12   | 265            | 0    | 334             | 6           | 250                | 340  | 0       | 299   | 0        | 0        | 0          | 0  | 0 17   | A STATE OF THE STA | 9         | 0           | 652                                     | 1585                                     |
| 05:00 PM            | 12      | +    | 58             | 0    | 71              | <del></del> | 55                 | 82   | 0       | 138   | 0        | 0        | 0          | 0  | 7  |  | 4         | 0           | 257                                     | 466                                      |
| 05:15 PM            | 10      | 4    | 69             | 0    | 83              | 7           | 26                 | 74   | 0       | 132   | 0        | 0        | 0          | 0  | 3  |  | 4         | <del></del> | 154                                     | 369                                      |
| 05:30 PM            | 7       | 12   | 84             | 0    | 103             | 2           | 29                 | 69   | 0       | 130   | 0        | 0        | 0          |  | 0 2  |  |           | 0           | 116                                     | 349                                      |
| 05:45 PM            | თ       | 4    | 64             | 0    | 77              |             | 37                 | 29   | 0       | 105   | 0        | 0        | 0          | 0  | 0  | 18 54  | *         | 0           | 73                                      | 255                                      |
| Total               | 38      | 21   | 275            | 0    | 334             | 9           | 207                | 292  | 0       | 202   | 0        | 0        | 0          | 0  | 149  |  | 10        | -           | 009                                     | 1439                                     |
| Grand Total         | 95      | 33   | 540            | 0    | 899             | 15          | 457                | 632  | 0       | 1104  | 0        | 0        | 0          | 0  | 0 32   |  | 16        | 4           | 1252                                    | 3024                                     |
| Apprch %            | 14.2    | 4.9  | 80.8           | 0    |                 | 1.4         | 41.4               | 57.2   | 0       |   | 0        | 0        | 0          | 0  | 26.1   | 1 72.5   | 1.3       | 0.1         | *************************************** |  |
| Total %             | 3.1     | 7    | 17.9           | 0    | 22.1            | 0.5         | 15.1               | 20.9   | 0       | 36.5  | 0        | 0        | 0          | 0  | 0 10.  |  | 0.5       | 0           | 41.4                                    |  |
| Passenger Cars      |         |      |                |      |                 |             |                    | A HOLD RATIONAL VOICE OF THE STATE OF THE ST |         |   |          |          |            |  |  |  |           |             |   |  |
| % Passenger Cars    | 93.7    | 100  | 98.3           | 0    | 8.76            | 100         | 97.6               | 99.2   | 0       | 96.5  | 0        | 0        | 0          | 0  | 0 99.1   | 1 99   | 100       | 100         | 66                                      | 97.8                                     |
| SU Trucks & Buses   | _       | 0    | တ              | 0    | 10              | 0           | <del>0</del>       | 5  | 0       | 24  | 0        | 0        | 0          | 0  | 0  | 7  | 0         | 0           | ω                                       | 42                                       |
| % SU Trucks & Buses | <u></u> | 0    | 1.7            | 0    | 1.5             | 0           | 4.2                | 0.8  | 0       | 2.2   | 0        | 0        | 0          | 0  | 0.3  | 3 0.8  | 0         | 0           | 9.0                                     | 1.4                                      |
| MU Trucks           | ß       | 0    | 0              | 0    | S               | 0           | 15                 | 0  | 0       | 15  | 0        | 0        | 0          | 0  | 0 2  |  | 0         | 0           | 4                                       | 24                                       |
| % MU Trucks         | 5,3     | 0    | 0              | 0    | 0.7             | 0           | 3.3                | 0  | 0       | 4.  | 0        | 0        | 0          | 0  | 0.   | 6 0.2  | 0         | 0           | 0.3                                     | 0.8                                      |

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File Name: Watervliet Shaker Road & Exit 5 SB Ramp PM Site Code: 111111111

: 1/27/2009 : 2

Start Date Page No

Watervliet Shaker Road & Exit 5 SB Exit 3/Exit 4 PM

4 to 6

Exit 3/Exit 4

Watervliet Shaker Road & Exit 5 SB

4 to 6 ΡM

File Name: Watervliet Shaker Road & Exit 5 SB Ramp PM Site Code: 111111111
Start Date: 1/27/2009
Page No: 3

|  |             | Exit<br>So   | Exit 5 SB Ramp Southbound | amp<br>nd       |          |              | Re   | oute 155<br>estbound |        |            |       | ΟŌ                                      | On-Ramp<br>Northbound | 7       |            | IN White terror error er | Ea.  | Route 155<br>Eastbound | T 01 |   |                |
|--|-------------|--------------|---------------------------|-----------------|----------|--------------|------|----------------------|--------|------------|-------|---|-----------------------|---------|------------|--|--|------------------------|------|---|----------------|
| Start Time   | Right       | Thru         | Left                      | Peds App. Total | p. Total | Right        | Thru | Left                 | Peds A | App. Total | Right | Thru                                    | Left                  | Peds Ag | App. Total | Right  | Thru   | Left                   | Peds | App Total In                            | Int Total      |
| Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of | is From 0   | 4:00 PM      | to 05:45                  | PM - Peak       | 1 of 1   |              |      |                      | -      |            |       | *************************************** |                       |         |            |  | The state of the s |                        | - 5  |   |                |
| Peak Hour for Entire Intersection Begins at 04:15 PM     | ire Interse | action Be    | gins at 0                 | 4.15 PM         | ·<br>•   |              |      |                      |        |            |       |   |                       |         |            |  |  |                        |      |   |                |
| 04:15 PM   | 6           | 5            | 2                         |                 | 8        | 5            | 69   | 2                    |        |            |       |   |                       |         | _          | T  | 0  | d                      |      |   |                |
| 04:30 PM   | 17          | <del></del>  | 53                        | 0               | 71       | 7            | 22   | 103                  | 0      | 160        | 0     | 0                                       | 0                     | 0       | 0          | 42   | 135  | 2                      | 0    | 179                                     | 410            |
| 04:45 PM   | 12          | 4            | 68                        | 0               | 84       | <del>-</del> | 69   | 9/                   | 0      | 146        | 0     | 0                                       | 0                     | 0       | · C        | 46   | 112  | ıc                     | · C  | 7 · · · · · · · · · · · · · · · · · · · | 000            |
| 05:00 PM   | 12          | -            | 28                        | 0               | 71       | ~            | 55   | 82                   | 0      | 138        | 0     | 0                                       | 0                     | 0       | 0          | 22   | 178  | 4                      | ) C  | 257                                     | 466            |
| Total Volume   | 20          | -            | 249                       | 0               | 310      | 6            | 248  | 337                  | 0      | 594        | 0     | 0                                       | 0                     | 0       | 0          | 202  | 530  | 0                      | ) C  | 741                                     | 1645           |
| % App. Total   | 16.1        | 3.5          | 80.3                      | 0               |          | 1,5          | 41.8 | 56.7                 | 0      |            | 0     | 0                                       | 0                     | 0       | )          | 27.3   | 71.5   | 4                      | ) C  | *<br>*                                  | 5              |
| PHF  | .735        | .550         | .889                      | 000             | .923     | .450         | .899 | .818                 | 000    | .928       | 000   | 000                                     | 000                   | 000     | 000        | .673   | 744  | .563                   | 000  | 721                                     | 883            |
| Passenger Cars   | 46          | <del>-</del> | 242                       | 0               | 299      | 6            | 234  | 333                  | 0      | 929        | 0     | 0                                       | 0                     | 0       | 0          | 199  | 524  | 6                      | 0    | 732                                     | 1607           |
| % Passenger Cars   | 92.0        | 100          | 97.2                      | 0               | 96.5     | 100          | 94.4 | 98.8                 | 0      | 97.0       | 0     | 0                                       | 0                     | 0       | 0          | 98.5   | 98.9   | 100                    | 0    | 98.8                                    | 7.76           |
| SU Trucks & Buses  | 0           | 0            | 7                         | 0               | 7        | 0            | ∞    | 4                    | 0      | 12         | 0     | 0                                       | 0                     | 0       | 0          | <b>*</b>   | 4  | 0                      | 0    | ın                                      | 24             |
| % SU Trucks & Buses                                      | 0           | 0            | 2.8                       | 0               | 2.3      | 0            | 3.2  | 1.2                  | 0      | 2.0        | 0     | 0                                       | 0                     | 0       | 0          | 0.5  | 8.0  | 0                      | 0    | 0.7                                     | 7 5            |
| MU Trucks  | 4           | 0            | 0                         | 0               | 4        | 0            | 9    | 0                    | 0      | 9          | О     | С                                       | C                     | C       | C          | ~  | 0  | · C                    | · C  |   | , <del>r</del> |
| % MU Trucks  | 8.0         | 0            | 0                         | 0               | 1.3      | 0            | 2.4  | 0                    | 0      | 1.0        | 0     | 0                                       | 0                     | 0       | 0          | 1.0  | 0.4  | 0                      | 0    | 0.5                                     | 6.0            |

100

File Name: Sand Creek & Wolf Road TOTAL PM Site Code: 87654321

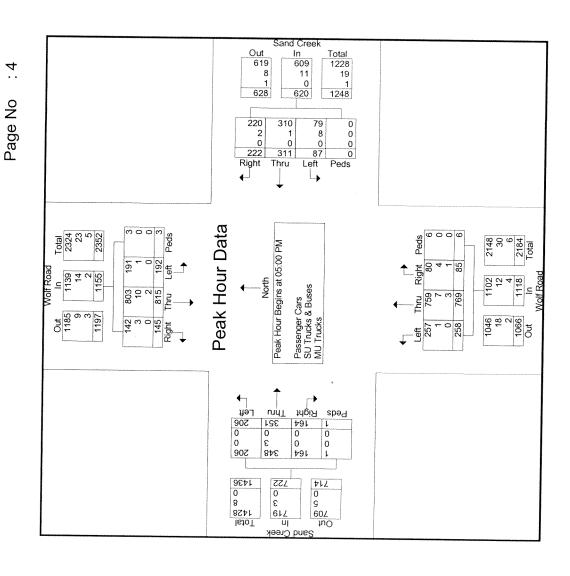
: 1/27/2009

Start Date

Sand Creek & Wolf Road Exit 3/ Exit 4

4 to 6

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> Exit 3/ Exit 4 Sand Creek & Wolf Road PM 4 to 6

Groups Printed- Passenger Cars - SU Trucks & Buses - MU Trucks

File Name: Sand Creek & Wolf Road TOTAL PM Site Code: 87654321 Start Date: 1/27/2009 Page No: 1

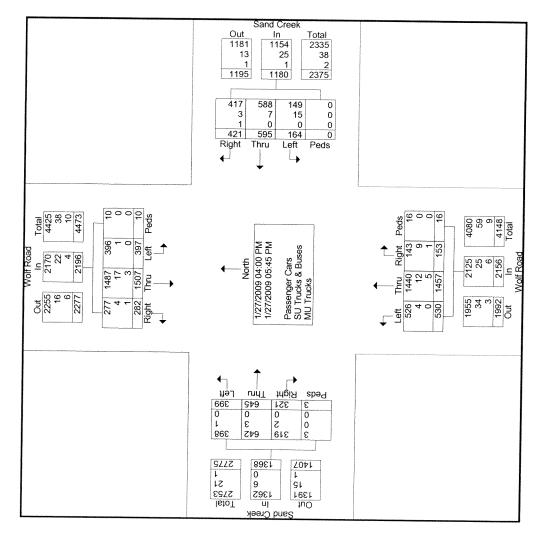
|  |             |              |            |     |            | _     | aroups   | Z    | G-rass    | وnger ر | Groups Printed-Passenger Cars - 50 | =     | TICKS & DUSES - INC. I LICKS | 22.00      | 222     |   |       |      |              |             |            |             |
|--|-------------|--------------|------------|-----|------------|-------|----------|------|-----------|---------|------------------------------------|-------|------------------------------|------------|---------|---|-------|------|--------------|-------------|------------|-------------|
| The state of the s |             |              | Wolf Road  | ad  |            |       | •        | Sanc | i Creek   |         |                                    |       | 3                            | Wolf Road  |         | A SAME A |       | Sal  | Sand Creek   | *           |            |             |
|  |             | S            | Southbound | pur |            |       |          | Wes  | Westbound |         |                                    |       | <sup>8</sup>                 | Northbound | ğ       |   |       | Шa   | Eastbound    | -           |            |             |
| Start Time   | Right       | Thr          | Left       | sps | App. Total | ļ     | Right    | Thru | Left      | spa     | App. Total                         | Right | ם                            | Left       | Peds A  | App. Total  | Right | Thru | Left         | Peds A      | App. Total | Int. Total  |
| 04:00 PM   | 38          | , market     | 62         | 5   | 25         |       |          | 29   | 23        | 0       | 139                                | 19    | 155                          | 52         | 0       | 226   | 33    | 90   | 43           | -           | 137        | 795         |
| 04:15 PM   | 30          |              | 43         | _   | 23         |       |          | 62   | 19        | 0       | 126                                | 20    | 155                          | 71         | 7       | 248   | 35    | 78   | 48           | _           | 162        | 768         |
| 04:30 PM   | 36          |              | 4          | 0   | 27         |       |          | 78   | 13        | 0       | 145                                | 15    | 197                          | 81         | 5       | 298   | 48    | 84   | 25           | 0           | 184        | 904         |
| 04:45 PM   | 33          | 149          | 56         | _   | 239        |       | 51       | 77   | 22        | 0       | 150                                | 14    | 181                          | 89         | က       | 266   | 41    | 72   | 20           | 0           | 163        | 818         |
| Total  | 137         | - Andrews    | 205        | 7   | 104        |       |          | 284  | 77        | 0       | 260                                | 99    | 688                          | 272        | 10      | 1038  | 157   | 294  | 193          | 7           | 646        | 3285        |
| 05.00 PM   | *********** | 241          |            | က   | 34         |       | 9        | 85   | 21        | 0       | 155                                | 15    | 175                          | 65         | ₩       | 256   | 40    | 63   | 53           | 0           | 156        | 606         |
| 05:15 PM   |             | 190          |            | · C | 25         |       | 20.      | 84   | 24        | 0       | 158                                | 23    | 197                          | 22         | <b></b> | 276   | 4     | 114  | 49           | <del></del> | 205        | 929         |
| 05:30 PM   |             | 218          |            | 0   | 3 i 3      | ~~~   | 72       | 77   | 15        | 0       | 164                                | 56    | 215                          | 72         | က       | 316   | 42    | 80   | 55           | 0           | 1771       | 944         |
| 05:45 PM   | က်          | 166          | 40         | 0   | 25         |       | 51       | 65   | 27        | 0       | 143                                | 21    | 182                          | 99         | _       | 270   | 41    | 94   | 49           | 0           | 184        | 833         |
| Total  |             | 815          | ľ          | 3   | 1155       |       |          | 311  | 87        | 0       | 620                                | 85    | 769                          | 258        | 9       | 1118  | 164   | 351  | 206          | <del></del> | 722        | 3615        |
| Grand Total  | 282         | 1507         |            | 10  | 2196       |       |          |      | 164       | C       | 1180                               | 153   | 1457                         | 530        | 16      | 2156  | 321   | 645  | 366          | က           | 1368       | 0069        |
| Approch %  | 12.8        | 68.6         |            | 0.5 |            |       | 35.7 5   | 50.4 | 13.9      | 0       |                                    | 7.1   | 9.79                         | 24.6       | 0.7     |   | 23.5  | 47.1 | 29.2         | 0.2         |            |             |
| Total %  | 4.1         | 21.8         | 5.8        | 0.1 | 31.8       |       |          |      | 2.4       | 0       | 17.1                               | 2.2   | 21.1                         | 7.7        | 0.2     | 31.2  | 4.7   | 9.3  | 5.8          | 0           | 19.8       |             |
| Passenger Cars   |             |              |            |     |            |       |          |      |           |         |                                    |       |                              |            |         |   |       |      |              |             |            | 9           |
| % Passenger Cars   | 98.2        | 98.7         | 99.7       | 100 | 98.8       |       | 6<br>66  | 98.8 | 6.06      | 0       | 8.76                               | 93.5  | 98.8                         | 99.2       | 100     | 98.6  | 99.4  | 99.5 | 99.7         | 100         | 9.66       | 98.7        |
| SU Trucks & Buses  | 4           | 17           | _          | 0   | , 7        | 22    | က        | 7    | 15        | 0       | 22                                 | တ     | 12                           | 4          | 0       | 52  | 7     | က    | <del>-</del> | 0           | ဖ          | 78          |
| % SU Trucks & Buses  | 4.          | <del>-</del> | 0.3        | 0   |            | -     | 0.7      | 1.2  | 9.1       | 0       | 2.1                                | 5.9   | 0.8                          | 0.8        | 0       | 1.2   | 9.0   | 0.5  | 0.3          | 0           | 0.4        |             |
| MU Trucks  | -           | 3            | 0          | 0   |            | 4     | <b>.</b> | 0    | 0         | 0       |                                    | -     | 2                            | 0          | 0       | 9   | 0     | 0    | 0            | 0           | 0          | <del></del> |
| % MII Trucks   | 0.4         | 0.2          | С          | С   | O          | 0.2 0 | 1.2      | 0    | 0         | 0       | 0.1                                | 0.7   | 0.3                          | 0          | 0       | 0.3   | 0     | 0    | 0            | 0           | 0          | 0.2         |

> Sand Creek & Wolf Road Exit 3/ Exit 4 ΡM

4 to 6

File Name: Sand Creek & Wolf Road TOTAL PM : 1/27/2009 Site Code : 87654321 Start Date : Page No :

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Exit 3/ Exit 4 Sand Creek & Wolf Road PM 4 to 6

File Name: Sand Creek & Wolf Road TOTAL PM Site Code: 87654321 Start Date: 1/27/2009 Page No: 3

| abilit memore demonstrate en en en entre en en en entre entre entre en entre entr | 49 1 205                              | 49 1 205<br>55 0 177<br>49 0 184   | 14     49     1     205     929       80     55     0     177     944       94     49     0     184     833       51     206     1     722     3615       8.6     28.5     0.1     3615 |
|--|---------------------------------------|--|---|
|  | 4                                     | 4 <b>4 4</b> 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1   | 276 41 114<br>316 42 80<br>270 41 94<br>1118 164 351<br>22.7 48.6   |
|  | <del></del>                           | ₩ 67 €   | - <b>u</b> - 0 0  |
|  | 197                                   | 197<br><b>215</b><br>182   | 23 197 55<br>26 215 72<br>21 182 66<br>25 769 258<br>6 68.8 23.1  |
| -  |                                       |  | 158 23<br>164 26<br>143 21<br>620 85<br>7.6   |
|  |                                       |  | 24 0 15 0 27 0 87 0 14 0 000  |
| ,  | 85<br>50 84<br>73                     |  | (A)   |
|  |                                       |  |   |
| s at 05:00 PM  | 53<br>53<br>0<br>42                   | And the second s | 53 0<br>42 0<br>40 0<br>192 3<br>16.6 0.3   |
| Peak Hour for Entire Intersection Begins at 05:00 PM   |                                       | -  | 218<br>166<br>166<br>815<br>70.6<br>1845  |
| ntire inters   | ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ |  | 05:30 PM 47<br>05:30 PM 27<br>05:30 PM 27<br>05:45 PM 30<br>Total Volume 145<br>% App. Total 12.6<br>PHF .771   |



Exit 3 Airport Connector Wolf Rd & Central Ave AM 7 to 9

Clough, Harbour & Associates LLP Manual Turning Movement Count

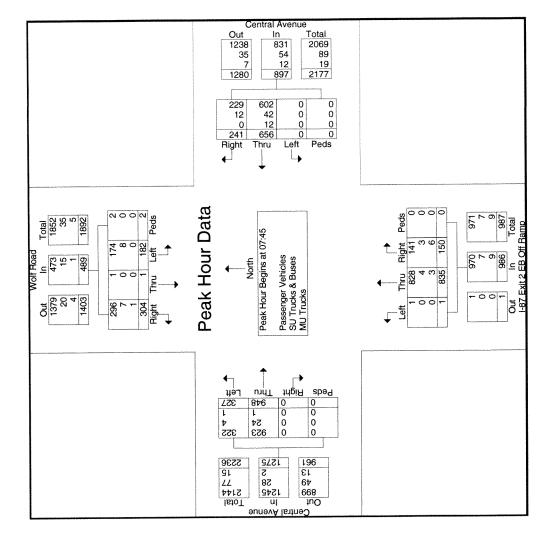
III Winners Circle, P.O. Box 5269

Albany, NY 12205 www.cloughharbour.com

File Name: Wolf - Central AM Site Code : 62906009

: 6/29/2006

Start Date: Page No:





Exit 3 Airport Connector Wolf Rd & Central Ave

AM 7 to 9

Clough, Harbour & Associates LLP III Winners Circle, P.O. Box 5269 Albany, NY 12205 www.cloughharbour.com Manual Turning Movement Count

File Name: Wolf - Central AM Site Code: 62906009 Start Date: 6/29/2006 Page No: 3

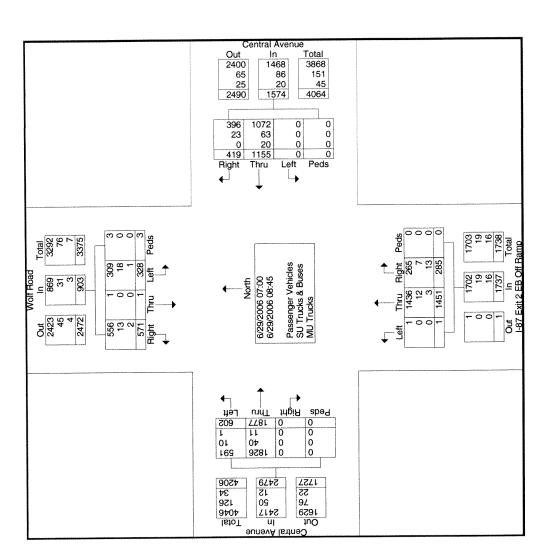
|  |              |            | Wolf Boad  | 7          |                |      | Cen           | tral Avenue | ile    |            |      | -87 Exit | 1-87 Exit 2 EB Off Ramp | f Ramp |            |  | Cen    | Central Avenue | ne     |            |  |
|--|--------------|------------|------------|------------|----------------|------|---------------|-------------|--------|------------|------|----------|-------------------------|--------|------------|--|--------|----------------|--------|------------|--|
|  |              | Ű          | Southhound | ב ב        |                |      | Š             | estbound    | -      |            |      | ž        | Northbound              | ָ<br>ק |            |  | ш      | Eastbound      | 71     |            | The second secon |
| Start Time   | †a           | Thri       | Thru Bight | Peds       | Peds Ann Total | Left | Thru          | Right       | Peds / | App. Total | Left | Thru     | Right                   | Peds / | App. Total | Left   | Thru   | Right          | Peds / | App. Total | Int. Total   |
| 2 2 2  |              | 3          | 2          |            |                |      | -             | ,           |        |            | -    | -        | -                       |        |            | out of the second secon |        |                |        |            |  |
| Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of | sis From 0   | 7:00 to    | 08:45 - P  | eak 1 of   | <del>-</del>   |      |               |             |        |            |      |          |                         |        |            |  |        |                |        |            |  |
| Peak Hour for Entire Intersection Begins at 07:45  | tire Interse | ection B   | egins at ( | 77:45      |                |      |               |             |        |            |      |          |                         |        | -          |  | 1      |                |        | ****       | 4.00   |
| 07.45  | 40           |            | ,          |            |                |      | 173           |             |        |            |      | 216      | 4                       |        |            |  | 273    |                |        | 344        | 906  |
| 00:00  | ? *          | c          | 7          | C          | *              |      | . t           | 48          | c      | 213        | -    | 216      | 40                      | 0      | 257        | 83   | 246    | 0              | 0      | 335        | 916  |
| 00.00  | - 17         | <b>o</b> c | 2 8        | 0 0        | - 7            | o C  | 167           | 2 5         | · C    | 237        | c    | 215      | 32                      | 0      | 247        | 79   | 229    | 0              | 0      | 308        | 927  |
| 08:12  | 7 4 7        | > •        | 18         | > <b>c</b> | 105            | o c  | ¥ 6           | <b>2</b>    | o c    | 2 5        | o C  | 188      | 38                      | 0      | 226        | 88   | 200    | 0              | 0      | 288        | 850  |
| 08:30  | <del>ડ</del> | -          | 11         | 7          | C71            | >    | 2             | 3           | >      |            |      | 2        | 2                       |        | 000        | 700  | 070    |                | c      | 1975       | 3647   |
| Total Volume                                       | 182          | -          | 304        | N          | 489            | 0    | 929           | 241         | 0      | 897        | _    | 835      | 200                     | >      | 200        | 321  | 940    | ۰ د            | ۰ د    | 0 14       |  |
| O App Total  | 27.0         | 0          | 600        | 0.4        |                | c    | 73.1          | 698         | 0      |            | 0.1  | 84.7     | 15.2                    | 0      |            | 25.6   | 74.4   | 0              | 0      |            |  |
| /o App. Total                                      | 4.10         | 4.00       | 77.70      | 050        |                |      | 048           | 861         | 000    | 946        | 250  | 996      | 938                     | 000    | 926        | 919  | 898.   | 000:           | 000    | .927       | .956   |
| <b>L</b>   | .929         | )<br>(2)   | 100.       | 50.0       | .900           |      | 5 5           | 000         | 2      | 831        | -    | 828      | 141                     | C      | 970        | 322  | 923    | 0              | 0      | 1245       | 3519   |
| Passenger Vehicles                                 | 1/4          | -          | 087        | V          | 5,4            | >    | 200           | 27          | > (    | 3 8        | - 0  | 9 6      |                         |        | . 00       | 3 00   | 7 70   | c              | c      | 976        | 96.5   |
| % Passenger Vehicles                               | 92.6         | 9          | 97.4       | 9          | 2.96           | 0    | 91.8          | 95.0        | 0      | 9.76       | 3    | 33.5     | 0.4°C                   | >      | 4.00       | 0.0  | 1.70   | 0 (            | > 0    | 5 6        | 55   |
| 000000   | α            | C          | 7          | С          | 15             | 0    | 42            | 12          | 0      | 54         | 0    | 4        | က                       | 0      | 7          | 4  | 24     | 0              | >      | 87         | -<br>-<br>-  |
| מס וימרעים מי מסים                                 | 7            | • •        | 0          | · C        | ď              | C    | 6.4           | 5.0         | С      | 0.9        | 0    | 0.5      | 2.0                     | 0      | 0.7        | 1.2  | 2.5    | 0              | 0      | 2.2        | 2.9  |
| % SU Trucks & Buses                                | r c          | 0 0        | i          | 0 0        | ;              | ) C  | 10            | )<br>;      |        | 12         | c    | CT.      | y                       | С      | o          | -  | -      | 0              | 0      | 01         | 24   |
| MO I rucks   | <b>&gt;</b>  | >          |            | >          | -              | >    | 7             | >           | •      | 1          | •    | ,        |                         | • (    |            | 0  | •      | <              | c      | 00         | 7 0  |
| % MU Trucks  | 0            | 0          | 0.3        | 0          | 0.2            | 0    | <u>.</u><br>8 | 0           | 0      | <u>د</u> . | 0    | O.<br>4  | 4.O                     | >      |            |  | -<br>o | >              | >      | 4.0        | 3  |



Exit 3 Airport Connector Wolf Rd & Central Ave AM 7 to 9

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File Name: Wolf - Central AM : 62906009 : 6/29/2006 : 2 Site Code

Start Date: Page No:



Exit 3 Airport Connector Wolf Rd & Central Ave

7 to 9

Manual Turning Movement Count
Clough, Harbour & Associates LLP
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Albany, NY 12205
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File Name: Wolf - Central AM Site Code: 62906009 Start Date: 6/29/2006 Page No: 1

|                      |             | *             | 2 7 7       | 7             |            | 2             | Tool Tool | Central Avenue | . 9           | Control Avenue 1-87 Exit 2 EB Off Ramp | -        | I-87 Exit 2 EB Off Ramp | 2 EB Of         | Ramp   |            |          | Cent   | Central Avenue | ne     |  |  |
|----------------------|-------------|---------------|-------------|---------------|------------|---------------|-----------|----------------|---------------|--|----------|-------------------------|-----------------|--------|------------|----------|--------|----------------|--------|--|--|
|                      |             | <b>&gt;</b>   | Wolf Road   | a 7           |            |               | N N       | Westbound      | ù<br>3        |  | •        | Š                       | Northbound      | o      |            |          | Ëa     | Eastbound      | 73     | A CALIFORNIA DE LA CALI | The same and the s |
| T Troto              | 40-         | 2             | de la compa | 900           | Ann Total  | tja -         | Thri      | Right          | Peds          | Ann. Total                             | Left     | Thru                    | Right           | Peds / | App. Total | Left     | Thru   | Right          | Peds / | App. Total   | Int. Total   |
| Start Hille          | <u> </u>    | 3 0           | 50 7        | 200           | App. Lotal | 5             | 2 0       | 10             |               |  | 10       | 1.0                     | 1.0             | 1.0    |            | 1.0      | 1.0    | 1.0            | 1.0    |  | The second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a second section in the second section in the second section is a section in the second section in the section is a section in the section in the section is a section in the section in the section is a section in the section in the section is a section in the section in the section in the section is a section in the section in the section in the section in the section is a section in the section in th |
| Factor               | 0.          | 0.0           | )<br>       | 2.            | 00         | 2.            | 2 8       | 2.0            | 2             | 107                                    | 2        | 141                     | 27              | C      | 168        | 29       | 211    | 0              | 0      | 270  | 645  |
| 00:20                | 27          | 0             | 25          | <b>-</b> (    | g 7        | <b>&gt;</b> 0 | 1 2       | ဂ္ဂ င          | <b>o</b> c    | 177                                    | o c      | 137                     | 1 K             | · C    | 163        | 20       | 200    | 0              | 0      | 256  | 999  |
| 07:15                | 37          | 0             | 24          | 0             | 55         | <b>-</b>      | <u> </u>  | g (            | <b>&gt;</b> c | 200                                    | > <      | 2 9                     | 3 5             | o c    | 200        | 74       | 274    | 0              | 0      | 348  | 824  |
| 02:30                | 27          | 0             | 29          | 0             | <b>8</b>   | 0 (           | 98        | <del>5</del> 6 | <b>o</b> 0    | 700                                    | > 0      | 2 5                     | <b>?</b> {      | 0 0    | 256        | 7.       | 273    | 0              | 0      | 344  | 954  |
| 07:45                | 49          | 0             | 69          | 0             | 118        |               | 1/3       | 3              | ٥             | 220                                    |          | 212                     | 100             |        | 786        | 260      | 929    | c              | 0      | 1218   | 3088   |
| Total                | 140         | 0             | 242         | -             | 383        | 0             | 518       | 183            | 0             | 5                                      | >        | 400                     | 25              | >      | 3          | 3        | 3      | •              | ,      |  |  |
|                      | ;           | c             | 9           | c             | *          | c             | 185       | 48             | C             | 213                                    |          | 216                     | 4               | 0      | 257        | 89       | 246    | 0              | 0      | 335  | 916  |
| 00:80                | 4 ;         | > 0           | 2 8         | > 0           | - 0        | <b>o</b> c    | 202       | 2 6            | o c           | 23.7                                   | · c      | 2.5                     | 35              | 0      | 247        | 79       | 229    | 0              | 0      | 308  | 927  |
| 08:15                | 4/          | >             | 8           | <b>&gt;</b> ( | 000        | > 0           | <u>)</u>  | 2 8            | > <           | 5 6                                    | · c      | 2 2                     | 8               | · C    | 226        | 88       | 200    | 0              | 0      | 588  | 850  |
| 08:30                | 45          | -             | 1.1         | 7             | 125        | <b>&gt;</b> ( | Ω ;       | 8 8            | > <           | - 0                                    | > <      | 2 2                     | 3 5             | o c    | 201        | 8        | 244    | 0              | 0      | 330  | 912  |
| 08:45                | 22          | 0             | 8           | 0             | 149        | С             | 154       | ည်             | >             | 717                                    | ,        | 0/-                     | 2 5             | 0      | 100        | 240      | 010    |                | c      | 1261   | 3605   |
| Total                | 188         | -             | 329         | Ø             | 250        | 0             | 637       | 236            | 0             | 8/3                                    | <b></b>  | /6/                     | 55              | >      | S<br>S     | 44       | 0      | •              | •      | 1  |  |
| H                    | Ġ           | •             | 77          | Ċ             | coo        | c             | 11        | 410            | c             | 1574                                   | -        | 1451                    | 285             | 0      | 1737       | 602      | 1877   | 0              | 0      | 2479   | 6693   |
| Grand Total          | 070         | - +           | - 0         | 2 0           | 2          | 0 0           | 72.7      | 9 90           | · c           |  | 0.1      | 83.5                    | 16.4            | 0      |            | 24.3     | 75.7   | 0              | 0      |  |  |
| Appicit %            | 50.5<br>6.9 | - o           | 8.5         | 90            | 13.5       | 0             | 17.3      | 6.3            | 0             | 23.5                                   | 0        | 21.7                    | 4.3             | 0      | 56         | <b>o</b> | 28     | 0              | 0      | 37   |  |
| Passenger Vehicles   |             | 6             | 7           | 9             | 0 90       | c             | o<br>C    | Д              | c             | 033                                    | 100      | 6                       | 83              | 0      | 86         | 98.2     | 97.3   | 0              | 0      | 97.5   | 96.5   |
| % Passenger Vehicles | 94.2        | 3             | 4.78        | 3             | 30.7       |               | 07.0      | 5.5            |               | 2.5                                    | 2        | 12                      | 7               | C      | 5          | 10       | 40     | 0              | 0      | 20   | 186  |
| SU Trucks & Buses    | Σ,          | <b>&gt;</b> ( | 2 0         | > 0           | ى<br>د     | > 0           | 3 4       | 3 "            | <b>o</b> c    | 2 4                                    | o c      |                         | ر<br>بر         | o C    | -          | 1.7      | 2.1    | 0              | 0      | 2  | 2.8  |
| % SU Trucks & Buses  | ი.ზ         | 0             | 2.3         | ۰             | 4.0        | >             | 0.0       | 0.0            |               | 5.5                                    |          | 200                     | i c             | 0      | 19         | •        | -      | 0              | 0      | 12   | 51   |
| MU Trucks            | <b></b> -   | 0             | 21          | 0             | n          | 0             | 2         | >              | <b>&gt;</b> ( | 07,                                    | > 0      | <b>7</b> (              | 2 4             | > <    | 2 0        | - 0      | . c    | , c            | · C    | 0.5  | 0.8  |
| % MU Trucks          | 0.3         | 0             | 0.4         | 0             | 0.3        | 0             | 1.7       | 0              | 0             | <u>ئ</u> .                             | <b>O</b> | O.Y.                    | d. <del>4</del> | >      | O.'9       | 7.0      | o<br>o | >              | >      | )  | ;  |



Wolf Rd & Sand Creek Rd Exit 3 Airport Connector

AM 7 to 9

Clough, Harbour & Associates L Manual Turning Movement Count

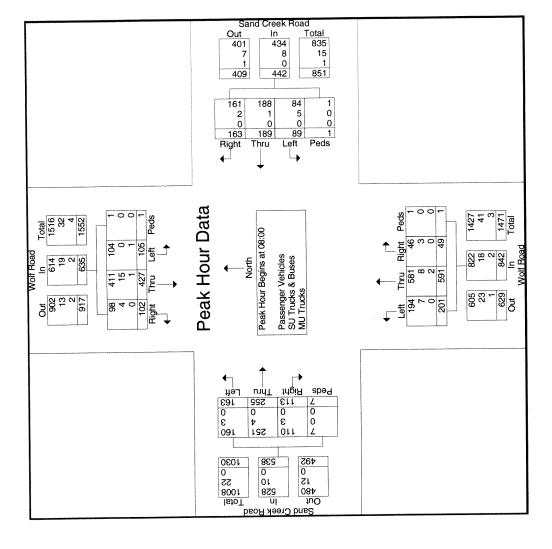
4

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Exit 3 Airport Connector Wolf Rd & Sand Creek Rd

AM 7 to 9

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File Name: Wolf - Sand Creek AM Site Code: 62806005 Start Date: 6/28/2006 Page No: 3

|   |             |            | Wolf Road  | DE         |                                 |        | Sand   | Creek Road | oad    |            |      | ×    | Wolf Road      |         |            |      | Sand ( | Sand Creek Road | oad    |  |  |
|---|-------------|------------|------------|------------|---------------------------------|--------|--------|------------|--------|------------|------|------|----------------|---------|------------|------|--------|-----------------|--------|--|--|
|   |             | (C)        | Southbound | pu         |                                 |        | -      | estbound   | 77     |            |      | Š    | Northbound     | 77      |            |      | Ëä     | Eastbound       |        | A STATE OF THE STA | the additional designation of the spine of the second section of the sec |
| Start Time  | -           | Thru       | Right      | Peds       | Left Thru Right Peds App. Total | Left   | Thru   | Right      | Peds A | App. Total | Left | Thru | Right          | Peds Ap | App. Total | Left | Thru   | Right           | Peds A | App. Total   | Int. Total   |
| Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of  | is From     | 07:00 to   | 08:45 - P  | eak 1 of   | -                               |        |        |            |        |            |      |      |                |         |            |      |        |                 |        |  |  |
| Peak Hour for Entire Intersection Begins at 08:00   | tire Inters | ection B   | eqins at ( | 08:00      |                                 |        |        |            |        |            |      |      |                |         |            |      |        | ļ               |        | ì  | 0  |
| 00.00   | <u>6</u>    | 118        | )          |            |                                 | 25     |        |            |        |            |      |      | <del>1</del> 5 |         |            | 45   |        | 37              |        | 151  | 930  |
| 08:45   |             | 9          | 23         | C          | 139                             | 4      | 45     | 37         | С      | 100        | 26   | 156  | 9              | 0       | 222        | 43   | 22     | 34              | 0      | 132  | 593  |
| 06:30   | 3 6         | 7          | 3 5        | •          | 2 7                             | 2 6    | 5 6    | 2.4        | · •    | 108        | 4    | 156  | 15             | -       | 213        | 8    | 69     | 52              | ო      | 131  | 630  |
| 08.30   |             | 2 5        | 20         | <b>-</b> C | 9 9                             | 1 %    | 1 4    | 45         | - c    | 123        | 28   | 124  | ြ              | 0       | 191        | 4    | 64     | 17              | 21     | 124  | 298  |
| Total Volume  |             | 427        | 100        | -          | 635                             | 168    | 8 68   | 163        | , -    | 442        | 201  | 591  | 49             | -       | 842        | 163  | 255    | 113             | 7      | 538  | 2457   |
| % Ann Total   | 16.5        | 67.2       | 16.1       | 0          | )                               | 20.    | 42.8   | 36.9       | 0.2    |            | 23.9 | 70.2 | 5.8            | 0.1     |            | 30.3 | 47.4   | 21              | 1,3    | 2000   |  |
| DHE DHE   | L           | -          | 823        | 250        | 892                             | 068    | 844    | 906        | .250   | 898        | 998. | .947 | .817           | .250    | .948       | 906  | .924   | .764            | .583   | .891   | 996.   |
| And a first death of the first | 1           |            | S o        | -          | 614                             | 84     | 188    | 161        | -      | 434        | 194  | 581  | 46             | -       | 822        | 160  | 251    | 110             | 7      | 228  | 2398   |
| Passenger venicles  | 0           | - 6        | 8 6        | - 00       | 96.7                            | 04 4   | 99.5   | 8 86       | 100    | 98.2       | 96.5 | 98.3 | 93.9           | 100     | 97.6       | 98.2 | 98.4   | 97.3            | 100    | 98.1   | 97.6   |
| % Passenger Venicles  | 9           | 200        | - <        | 2          | 10                              | . ư    | ,      | 0          | · C    | 00         | 7    | 00   | က              | 0       | 48         | က    | 4      | က               | 0      | 9  | 52   |
| SU Incks & buses  | > <         | ַ מ<br>כית | יס יו      | o c        | 2 6                             | ינ     | ر<br>د | 10         | · C    | 0 00       | , K  | 14   | 9.1            | 0       | 2.1        | 4.8  | 1.6    | 2.7             | 0      | <del>1</del>   | 2.2  |
| % SO Trucks & Buses   | · ·         |            | 9 0        | o c        | 900                             | )<br>; | )<br>} | i c        | · c    | · C        | C    | ^    | О              | 0       | 7          | 0    | 0      | 0               | 0      | 0  | 4  |
| MU Trucks   | 1.0         | 0.2        | 0          | 0          | 0.3                             | 0      | 0      | 0          | 0      | 0          | 0    | 0.3  | 0              | 0       | 0.2        | 0    | 0      | 0               | 0      | 0  | 0.2  |
|   | 2           |            | •          | •          | -                               |        |        |            |        | -          |      |      |                |         |            |      |        |                 |        |  |  |



Wolf Rd & Sand Creek Rd Exit 3 Airport Connector

AM 7 to 9

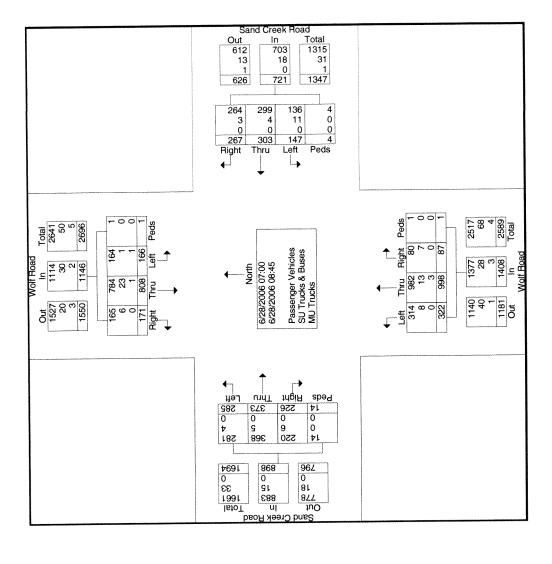
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File Name: Wolf - Sand Creek AM

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Wolf Rd & Sand Creek Rd Exit 3 Airport Connector

7 to 9 AM

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File Name: Wolf - Sand Creek AM : 62806005 Site Code

: 6/28/2006 : 1 Start Date Page No

| Southbound         Southbound         Mestbound         Northbound         Int. Total         Int. Tot  |                      |          | 3          | Wolf Road      | 777           |       | San          | Sand Creek Road Wolf Road | d Creek Road   | pad           |           |          | Š          | Wolf Road      |     |           |          | Sand | Sand Creek Hoad | oac, |      |                |
|--|----------------------|----------|------------|----------------|---------------|-------|--------------|---------------------------|----------------|---------------|-----------|----------|------------|----------------|-----|-----------|----------|------|-----------------|------|------|----------------|
| Thirty   Right   Pecks   App. Total   Left   Thirty   Right   Pecks   App. Total   Thirty   Right   Thirty   Right   Thirty   Thirt |                      |          | C.         | uthboun        | 2             |       |              | We                        | stbounc        |               |           |          | 2          | thboun         | 0   |           |          | ű.   | StDounc         |      |      |                |
| 12   131   | Cto Timo             | #0       | Thrit      | Dicht          | Dade          | Total | #a#          | Thru                      | Right          | Peds          | pp. Total | Left     | Thru       | Right          |     | pp. Total | Left     | Thru | Right           |      | -    | Int. Total     |
| 1  | oldii IIII           | בו בו    | - 1        | - 1            | 3             | - Com | -            | 10                        | 90             |               | 9         | 6        | 80         | 17             | 0   | 116       | 21       | 27   | 22              |      | 74   | 343            |
| 12         93         11         93         11         93         12         93         94         95         94         95         94<   | 00:20                | = :      | <b>-</b> 8 | = ;            | <b>&gt;</b> 0 | 2 4   | <u>.</u> č   | 2 5                       | 3 5            | 1 C           | 25 4      | 2 8      | 26         | 9              | 0   | 123       | 56       | 15   | 23              | 0    | 94   | 357            |
| 17         112         26         0         153         7         28         26         101         48         121         9         0         178         46         41         39         3         129           21         116         21         6         12         118         13         7         360         178           21         381         69         0         511         58         114         104         3         279         121         407         38         0         566         122         118         113         7         360         139           19         118         21         6         16         12         15         0         222         43         55         34         0         132           33         113         31         1         178         24         42         41         108         41         156         15         1         21         43         6         13         34         69         13         3         13         34         69         13         44         156         15         1         44         14         156         15  | 07:15                | 12       | SS :       | _ 8            | <b>&gt;</b> 0 | 0 1   | 7 1          | 8 8                       | 4 6            | <b>o</b> c    | 5 6       | 3 2      | 5 0        | œ              | · C | 149       | 53       | 32   | 56              | က    | 93   | 461            |
| 105   21   105   21   105   21   105   21   105   115   121   105   121   105   121   105   121   105   121   105   121   105   121   105   121   105   121   105   121   105   121   105   121   105   121   105   121   105   121   105   121   105   121   105   121   105   121   105   10 | 02:30                | 1        | 112        | 8 8            | <b>&gt;</b> 0 | 2 2   | ٠ ي          | S C                       | 9 8            | <b>-</b>      | \$ 5      | 2 4      | 5 5        | o 0.           | 0   | 178       | 46       | 41   | 36              | က    | 129  | 522            |
| 19         118         21         0         158         25         46         40         0         111         46         155         15         15         67         37         2         151           20         96         23         0         139         18         45         37         0         100         56         156         16         0         222         43         55         34         0         132           33         113         31         1         178         24         42         41         168         45         16         6         15         1         213         34         69         25         34         0         123         58         124         9         0         191         41         69         25         34         0         123         28         124         442         201         591         49         1         442         1         442         201         442         201         442         201         442         201         49         1         444         144         442         37         6.2         0.1         444         144         144         144  | 07:45<br>Total       | 5 5      | 381        | 69             | 0             | 511   | 88           | 114                       | 104            | - 8           | 279       | 121      | 407        | 38             | 0   | 999       | 122      | 118  | 113             | 7    | 360  | 1716           |
| 19         118         21         0         158         25         40         40         101         65         152         43         55         34         0         132           20         96         23         0         138         14         45         0         100         56         15         1         213         34         69         25         3         40         132           33         113         31         178         22         56         45         0         123         58         124         9         0         191         41         64         17         21         34         69         25         124         17         21         201         591         49         1         84         17         21         44         144         156         15         1         1408         255         113         7         538         11         41         442         37         0.6         22.9         70.9         6.2         0.1         1408         255         11.4         898         14         1408         28         37         41.5         25.2         1.6         1408         11.4   |                      |          |            | į              | ,             |       | į            | •                         | Ç              | c             | *         | 9        | 1,<br>7,7, | <u>ب</u><br>بر | c   | 216       | 45       | 29   | 37              | 8    | 151  | 989            |
| 20         96         23         0         139         18         45         37         0         100  | 08:00                | 10       | 118        | 5              | ۰ د           | 158   | g ;          | ð í                       | 3 €            | > 0           | - 5       | 2 4      | 2 2        | 2 ⊊            | · C | 222       | 43       | 55   | 34              | 0    | 132  | 593            |
| 33         113         31         1         178         24         41         1         106         41         120         9         191         41         64         17         2         124           33         100         27         0         160         22         45         0         123         681         19         1         49         1         842         163         55         113         7         538         1         4         123         261         49         1         842         163         255         113         7         538         1         1         148         143         7         1         1408         285         373         26         14         7         22.9         70.9         6.2         0.1         1         14         898         1         1         1408         88         37         6.8         89         5.4         0.3         1.1         1         1         1         1         1         1         1         1         1         1         1         1         2         1         1         1         1         1         1         1         1         1  | 08:15                | 8        | 96         | 33             | 0             | 139   | 20 7         | <del>ડ</del> :            | <u>بر</u>      | > 1           | 3 5       | 8 5      | 5 4        | 5 12           | ·   | 213       | 2 6      | 69   | 52              | က    | 131  | 630            |
| 33 100 27 0 160 22 56 45 0 123 30 124 3 1 140 842 153 153 1 1 140 842 1 163 1 1 144  | 08:30                | ဗ္ဗ      | 13         | 31             | -             | 178   | 24           | 4.                        | -<br>-         | - (           | 9 9       | 4 r<br>c | 2 5        | 2 0            | - c | 101       | 41       | 64   | 17              | 8    | 124  | 598            |
| 105         427         102         1         635         89         189         163         1         442         201         591         49         1         642         103         221         591         49         1         1408         285         373         226         14         898         7         1         1408         285         373         226         14         898         14         14         898         7         1         1408         285         373         226         14         898         14         14         14         14         37         0.6         22.9         70.9         6.2         0.1         1408         285         373         226         14         898         14         14         18         8         14         14         14         14         14         14         14         14         14         14         14         14         14         14         14         14         15         14         15         14         15         14         15         14         15         14         15         14         15         14         15         14         15         15         14  | 08:45                | 33       | 100        | 27             | 0             | 160   | 55           | 20                        | 45             | 0             | 123       | 200      | +7         | 5              | > - | 0.40      | 163      | 255  | 113             | 7    | 538  | 2457           |
| 166         808         171         1         1146         147         303         267         4         721         322         998         87         1         1408         285         373         226         14         898           14.5         70.5         14.9         0.1         14.6         20.4         4         20.4         0.6         22.9         70.9         6.2         0.1         41.5         25.2         1.6         98.9         10.0         97.5         97.5         97.5         98.4         92         100         97.8         98.9         5.4         0.1         10         98.3         10         98.3         10         98.3         10         98.3         10         98.3         10         98.9         10         97.5         98.4         92         100         97.8         98.9         5.4         0.3         10         98.3         10         98.3         10         98.3         10         98.3         10         98.3         10         98.3         10         98.3         10         98.3         10         98.3         10         98.3         10         98.3         10         12         12         10         12  | Total                | 105      | 427        | 102            | -             | 635   | 88           | 189                       | 163            |               | 442       | 201      | 261        | 9              |     | 246       | 3        | CC3  | 2               | -    |      | i<br>i         |
| 106         808         1/1         1 1 0         0         27.5         37.0         6.2         0.1         31.7         41.5         25.2         1.6           4         19.4         4.1         0         27.5         37.0         6.4         0.1         17.3         7.7         23.9         2.1         0         33.7         6.8         8.9         5.4         0.3         21.5           98.8         97.9         4.1         0         27.5         98.9         100         97.5         98.4         92         100         97.8         98.8         98.6         98.7         97.3         100         98.3           1         23         6         0         30         11         4         3         0         18         8         13         7         0         28         4         5         6         0         15           0.6         2.8         3.5         0         2.6         1.3         1.1         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0  |                      | 9        | Ö          | ļ              | *             | 4     | 1.47         | 303                       | 267            | 4             | 721       | 322      | 866        | 87             | -   | 1408      | 285      | 373  | 226             | 14   | 868  | 4173           |
| 14.5         70.5         14.9         0.1         20.4         4.2         0.1         17.3         7.7         23.9         2.1         0         33.7         6.8         8.9         5.4         0.3         21.5           98.8         97.5         96.5         100         97.5         97.5         98.4         92         100         97.8         98.6         98.7         97.3         100         98.3           98.8         97         96.5         100         97.5         97.5         98.4         92         100         97.8         98.6         98.7         97.3         100         98.3           98.8         97         96.5         100         97.5         97.5         98.4         92         100         97.8         98.6         98.7         97.3         100         98.3           98.8         97         96.5         11         4         3         0         18         8         13         7         0         28         4         5         6         0         17           0.6         2.8         3.5         0         2.6         1.3         1.1         0         0         0         0 <t< td=""><td>Grand Lotal</td><td>9 .</td><td>3 G</td><td>- ;</td><td></td><td>9</td><td><u> </u></td><td>3 5</td><td>27</td><td>- 6</td><td>į</td><td>0 00</td><td>602</td><td>6.2</td><td>0.1</td><td></td><td>31.7</td><td>41.5</td><td>25.2</td><td>4.6</td><td></td><td></td></t<>  | Grand Lotal          | 9 .      | 3 G        | - ;            |               | 9     | <u> </u>     | 3 5                       | 27             | - 6           | į         | 0 00     | 602        | 6.2            | 0.1 |           | 31.7     | 41.5 | 25.2            | 4.6  |      |                |
| 98.8         97         96.5         100         97.2         98.5         98.7         98.9         100         97.5         98.4         92         100         97.8         98.6         98.7         97.3         100         98.3           1         23         6         0         30         11         4         3         0         18         8         13         7         0         28         4         5         6         0         15           0.6         2.8         3.5         0         2.6         7.5         1.3         1.1         0         2.5         2.5         1.3         8         0         2         1.4         1.3         2.7         0         1.7           1         1         0         0         2.6         7.5         1.3         1.1         0  | Appren %             | 6.4<br>7 | 19.4       | 4. 4.<br>9. t. | - o           | 27.5  | 3.5          | 7.3                       | 6.4            | 0.1           | 17.3      | 7.7      | 23.9       | 2.1            | 0   | 33.7      | 6.8      | 8.9  | 5.4             | 0.3  | 21.5 |                |
| 98.8 97 96.5 100 97.2 92.3 96.7 96.3 100 97.2 97.3 96.7 96.3 97.3 97.3 97.3 97.3 97.3 97.3 97.3 97   | Passenger Vehicles   |          |            | i              | 0             | 1     | 5            | 1                         | 0              | 9             | 07.5      | Q7 K     | 98 4       | 6              | 100 | 97.8      | 98.6     | 98.7 | 97.3            | 100  | 98.3 | 7.76           |
| 1 23 6 0 30 11 4 3 0 18 6 13 7 0 17 17 18 10 2.8 3.5 0 2.0 7.5 1.3 1.1 0 2.5 1.3 8 0 2 1.4 1.3 2.7 0 1.7 17 18 1 1 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0   | % Passenger Vehicles | 98.8     | /6         | 96.5           | 3             | 31.7  | 92.5         | 30.7                      | 30.3           | 3             | 0.70      | 5        | 7          | 1              | 2   | 96        | 4        | ıc   | G               | C    | 15   | 91             |
| 0.6 2.8 3.5 0 2.6 7.5 1.3 1.1 0 2.5 2.5 1.3 6 0 2 1.4 1.0 2.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  | SU Trucks & Buses    | -        | ಜ          | 9              | 0             | 30    | <del>-</del> | 4                         | :<br>:         | <b>&gt;</b> ( | י פ       | 0 1      | 2 ;        | - 0            | > < | 3 6       | +        |      | 0               | · c  | 17   | 2.2            |
| 1 1 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  | % SU Trucks & Buses  | 9.0      | 2.8        | 3.5            | 0             | 5.6   | 7.5          | £.                        | <del>-</del> - | 0             | 2.5       | 2.5      | 5.         | ρ              | 0   | 7         | <u>+</u> | 5    | j               | > <  |      | i<br>I         |
| 0.6 0.1 0 0 0.2 0 0 0 0 0 0 0 0 0.2 0 0 0 0 0.6  | MU Trucks            | -        | -          | 0              | 0             | 2     | 0            | 0                         | 0              | 0             | 0         | 0        | က          | 0              | >   | n (       | > 0      | > 0  | > 0             | > <  | > 0  | ) <del>*</del> |
|  | % MU Trucks          | 0.6      | 0.1        | 0              | 0             | 0.2   | 0            | 0                         | 0              | 0             | 0         | 0        | 0.3        | 0              | 0   | 0.2       | >        | >    | 0               | >    | >    | -<br>>         |



Wolf Rd & Metro Park Rd Exit 3 Airport Connector

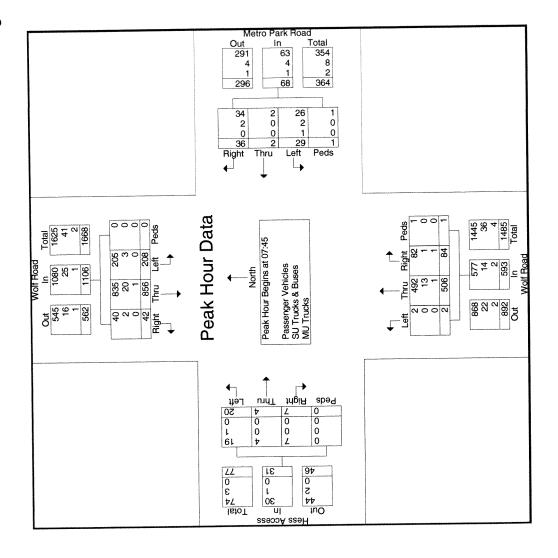
7 to 9 ΑM

Clough, Harbour & Associates LLP Manual Turning Movement Count

III Winners Circle, P.O. Box 5269 Albany, NY 12205 www.cloughharbour.com

File Name: Wolf - Metro Park AM

Site Code : 62806003 Start Date : 6/28/2006 Page No : 4 Start Date: Page No:





Wolf Rd & Metro Park Rd Exit 3 Airport Connector

7 to 9 ¥⊠

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III Winners Circle, P.O. Box 5269 www.cloughharbour.com Albany, NY 12205

File Name: Wolf - Metro Park AM Site Code

: 62806003

: 6/28/2006 : 3 Page No

Start Date

Hess Access

Left Left Thru Right Peds App. Total Southbound Start Time

.967 1750 97.3 44 2.4 0.2 445 458 **465** 798 Peds | App. Total | Int. Total 0 0 0 0 0 0 0 0 0 0 Eastbound Right 22.6 .583 4 1.000 1.000 100 0 0 0 Thr 6 5 20 20 64.5 833 19 95.0 .982 577 97.3 14 2.4 2.0 0.3 149 151 149 593 Peds App. Total Northbound Wolf Road Right 24 24 18 18 14.2 14.2 14.2 82 82 82 97.6 1.2 1.2 Thru Left .895 63 92.6 4 5.9 App. Total 0 0 1.5 1.5 100 0 0 0 Peds Metro Park Road Westbound 6 11 10 10 36 52.9 34 34 94.4 94.4 0 .950 1080 97.6 25 2.3 1 0.1 257 278 280 **291** 0 0 0 0 0 0 0 0 0 0 Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of Peak Hour for Entire Intersection Begins at 07:45 Wolf Road 204 211 208 208 856 856 877.4 835 97.5 20 20 20 2.3 1 43 56 60 49 49 208 18.8 3 3 3 1.4 Total Volume % App. Total 07:45 08:00 08:15 08:30 **MU Trucks** % MU Trucks Passenger Vehicles % Passenger Vehicles SU Trucks & Buses % SU Trucks & Buses



Wolf Rd & Metro Park Rd Exit 3 Airport Connector

AM 7 to 9

Clough, Harbour & Associates LLP Manual Turning Movement Count

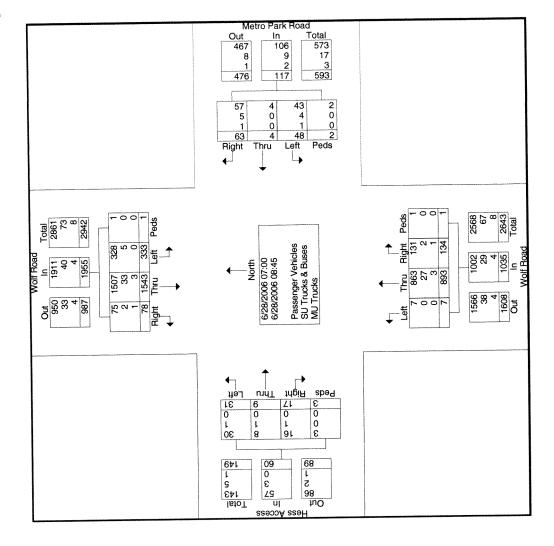
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File Name: Wolf - Metro Park AM

Site Code : 62806003

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Wolf Rd & Metro Park Rd Exit 3 Airport Connector

AM 7 to 9

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File Name: Wolf - Metro Park AM

Site Code : 62806003 Start Date : 6/28/2006 Page No : 1

| Southbound         Mestpound         Mestpound         Mestpound         Mestpound         Morthbound         Morthbound< |                      |      | >    | Wolf Road      | ק   |            |      | Metro | Metro Park Road | pad |           |      | =    | Wolf Road | 70  |           |      | Ŧ    | Hess Access | SS   |            |            |
|---|----------------------|------|------|----------------|-----|------------|------|-------|-----------------|-----|-----------|------|------|-----------|-----|-----------|------|------|-------------|------|------------|------------|
| Left         Thru         Right         Peeds         App. Total         App.                                      |                      |      | ഗ്   | outhbou        | 멀   |            |      | š     | stboun          | 773 |           |      | ž    | orthbour  | פ   |           |      | ŭ    | Eastbound   | 모    |            |            |
| 24         124         10         1         159         1         1         5         0         7         0         67         6         0         73           27         161         12         0         200         4         0         4         1         9         2         88         7         0         97           38         204         10         0         257         10         0         9         19         0         123         21         0         144           130         693         37         1         861         1         25         1         46         2         391         49         0         144           56         221         1         1         25         1         46         2         391         49         0         144           60         228         1   | Start Time           | Left | Thru | Right          |     | App. Total | Left | Thru  | Right           |     | pp. Total | Left | Thru | Right     |     | pp. Total | Left | Thru | Right       | Peds | App. Total | Int. Total |
| 27         161         12         0         245         4         0         4         1         9         2         88         7         0         97           36         204         5         0         245         4         0         7         0         113         15         0         128           43         204         10         0         245         10         0         9         0         113         15         0         144           130         693         37         1         861         1         6         0         13         18         0         442           56         211         11         0         278         6         1         6         0         13         18         0         442           49         228         1         11         0         17         0         127         24         0         141           49         23         14         29         3         38         1         7         893         134         1         149           49         24         10         1094         29         3         38 <td>07:00</td> <td>24</td> <td>124</td> <td>9</td> <td>-</td> <td>159</td> <td>-</td> <td>-</td> <td>2</td> <td>0</td> <td>7</td> <td>0</td> <td>67</td> <td>9</td> <td>0</td> <td>73</td> <td>9</td> <td>2</td> <td>2</td> <td>0</td> <td>10</td> <td>249</td>   | 07:00                | 24   | 124  | 9              | -   | 159        | -    | -     | 2               | 0   | 7         | 0    | 67   | 9         | 0   | 73        | 9    | 2    | 2           | 0    | 10         | 249        |
| 36         204         5         0         245         4         0         7         0         11         0         113         15         0         128           43         204         10         0         257         10         0         9         0         19         0         123         21         0         144           56         211         11         0         278         6         1         6         0         13         2         126         21         0         144           60         208         12         0         13         2         126         21         0         149           60         208         12         0         17         0         17         0         17         49         0         144           49         233         9         0         245         10         1         19         0         120         189         0         144         149         14         14         14         14         14         14         14         14         14         14         14         14         14         14         14         14 <t< td=""><td>07:15</td><td>27</td><td>161</td><td>12</td><td>0</td><td>200</td><td>4</td><td>0</td><td>4</td><td>-</td><td>0</td><td>C)</td><td>88</td><td>7</td><td>0</td><td>26</td><td>-</td><td>0</td><td>က</td><td>0</td><td>4</td><td>310</td></t<>   | 07:15                | 27   | 161  | 12             | 0   | 200        | 4    | 0     | 4               | -   | 0         | C)   | 88   | 7         | 0   | 26        | -    | 0    | က           | 0    | 4          | 310        |
| 43         204         10         0         9         0         19         0         123         21         0         144           130         693         37         1         861         19         1         25         1         46         2         391         49         0         144           56         211         11         0         278         6         1         6         0         13         2         126         21         0         149           60         208         12         0         226         1         1         0         17         0         127         24         0         144           49         233         198         9         0         130         1         149         0         130         144         149         149         144         149         144         149         144         149         144         149         144         149         144         149         144         149         144         149         144         149         144         149         144         144         144         144         144         144         144         144   | 07:30                | 36   | 204  | 2              | 0   | 245        | 4    | 0     | 7               | 0   | =         | 0    | 113  | 15        | 0   | 128       | 7    | -    | 0           | 7    | ស          | 389        |
| 130         693         37         1         861         19         1         25         1         46         2         391         49         0         442           56         211         11         0         13         2         126         21         0         149           60         208         12         0         13         2         126         21         0         151           49         208         12         0         13         2         12         24         0         151           49         208         10         10         1         0         17         0         127         24         0         151           203         850         41         0         1         0         1         0         13         2         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         2         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1 <td>07:45</td> <td>43</td> <td>204</td> <td>2</td> <td>0</td> <td>257</td> <td>5</td> <td>0</td> <td>တ</td> <td>0</td> <td>19</td> <td>0</td> <td>123</td> <td>21</td> <td>0</td> <td>44</td> <td>9</td> <td></td> <td>ო</td> <td>0</td> <td>9</td> <td>430</td>   | 07:45                | 43   | 204  | 2              | 0   | 257        | 5    | 0     | တ               | 0   | 19        | 0    | 123  | 21        | 0   | 44        | 9    |      | ო           | 0    | 9          | 430        |
| 56         211         11         0         278         6         1         6         0         13         2         126         21         0         149           49         238         12         280         5         1         11         0         17         0         127         24         0         151           38         198         9         0         245         10         1         1         0         127         24         0         144           203         850         41         0         245         10         1         1         9         0         130         18         1         149           203         850         41         0         1094         29         3         38         1         7         893         134         1         149           17         78.9         4         63         2         17         7         893         134         1         1035           10.5         48.7         2.5         0         61.7         1.5         0.1         2         28.2         4.2         0         1           10.5         97.  | Total                | 130  | 693  | 37             | -   | 861        | 19   | -     | 25              | -   | 46        | 2    | 391  | 49        | 0   | 442       | 15   | 4    | ထ           | 2    | 29         | 1378       |
| 60         208         12         0         280         5         1         11         0         17         0         127         24         0         151           49         233         9         0         291         8         0         10         1         19         0         130         18         1         149           203         86         41         0         245         10         1         11         0         22         3         119         22         0         144           203         850         41         0         1094         29         3         38         1         7         893         134         1         1035           17         78.9         4         0         1         143         4         63         2         117         7         893         134         1         1035           10.5         48.7         2.5         0         61.7         3.7         0.2         28.2         4.2         0         32.7           10.5         48.7         2.5         0         61.7         3.7         0         2         9         0   | 08-00                | 56   | 211  | =              | c   | 278        | œ    | -     | ç               | C   | 13        | 0    | 126  | 23        | 0   | 149       | က    | -    | -           | 0    | 5          | 445        |
| 49         233         9         0         291         8         0         10         1         19         0         130         18         1         149           203         198         9         0         245         10         1         11         0         22         3         119         22         0         144           203         850         41         0         1094         29         3         38         1         7         893         134         1         1035           17         78.9         4         0.1         1         34         53.8         1.7         7         893         134         1         1035           10.5         48.7         2.5         0         61.7         1.5         0.1         2         0.1         2         2.0         1         1035           10.5         48.7         2.5         0         61.7         1.5         0.1         3         1         0         3         7           98.5         97.7         96.2         100         97.7         10         96.6         97.8         10         9         1         0         29   | 08:15                | 8 8  | 208  | 2              | o C | 280        | , ru |       | , <del>-</del>  | 0   | 1         | 0    | 127  | 54        | 0   | 151       | မ    | +    | က           | 0    | 4          | 458        |
| 38         198         9         0         245         10         1         11         0         22         3         119         22         0         144           203         850         41         0         1094         29         3         38         1         7         893         134         1         593           333         1543         78         4         1         34         63         2         117         7         893         134         1         1035           10.5         48.7         2.5         0         61.7         1.5         0.1         2         86.3         12.9         0.1         1035           10.5         48.7         2.5         0         61.7         1.5         0.1         32.7         2         1.2         0.2         28.2         4.2         0         32.7           98.5         97.7         96.2         100         97.7         89.6         100         90.6         100         90.6         90.6         100         90.6         90.6         100         90.8         100         90.8         100         90.8         100         20         2         10<   | 08:30                | 49   | 233  | တ              | 0   | 291        | 00   | 0     | 9               | -   | 9         | 0    | 130  | 18        |     | 149       | S    |      | 0           | 0    | 9          | 465        |
| 203         850         41         1094         29         3         38         1         71         5         502         85         1         593           333         1543         78         1         1955         48         4         63         2         117         7         893         134         1         1035           17         78.9         4         0.1         3.4         53.8         1.7         0.7         86.3         12.9         0.1         1035           10.5         48.7         2.5         0         61.7         1.5         0.1         3.7         0.2         28.2         4.2         0         32.7           98.5         97.7         96.2         100         90.5         100         90.6         100         96.6         97.8         100         96.8           5         33         2         0         40         0         5         0         9         0         27         2         0         28           5         33         2         0         4         0         7.7         0         3         1.5         0         2         2   | 08:45                | 38   | 198  | თ              | 0   | 245        | 9    | -     | F               | 0   | 22        | က    | 119  | 22        | 0   | 144       | 7    | N    | ည           | -    | 10         | 421        |
| 333         1543         78         1         1955         48         4         63         2         117         7         893         134         1         1035           17         78.9         4         0.1         34         53.8         1.7         0.7         86.3         12.9         0.1         12.9         0.1         1         0.1         1         0.1         1         0.2         28.2         4.2         0         32.7         0         32.7         0         2         28.2         4.2         0         32.7         0         32.7         2         0         1         0         0         2         0         32.7         2         0         4         0         5         0         90.6         100         96.6         97.8         100         96.8         98.8         100         96.8         100         96.8         96.8         100         96.8         100         96.8         100         96.8         100         96.8         100         96.8         100         100         100         100         100         100         100         100         100         100         100         100         100  | Total                | 203  | 850  | 41             | 0   | 1094       | 59   | က     | 38              | -   | 71        | 5    | 502  | 85        | -   | 593       | 16   | 5    | 6           | -    | 31         | 1789       |
| 17         78.9         4         0.1         41         3.4         53.8         1.7         0.7         86.3         12.9         0.1           10.5         48.7         2.5         0         61.7         1.5         0.1         3.7         0.2         28.2         4.2         0         32.7           98.5         97.7         96.2         100         97.7         89.6         100         90.5         100         90.6         100         96.6         97.8         100         96.8           5         33         2         0         40         4         0         5         0         90         0         27         2         0         29           1.5         2.1         2.6         0         2         0         7.7         0         3         1.5         0         2.8           0         3         1         0         4         1         0         4         0         0         3         1         0         0         4   | Grand Total          | 333  | 1543 | 78             | •   | 1955       | 48   | 4     | 83              | 7   | 117       | 7    | 893  | 134       | -   | 1035      | 31   | o    | 17          | ო    | 9          | 3167       |
| 10.5         48.7         2.5         0         61.7         1.5         0.1         2         0.1         3.7         0.2         28.2         4.2         0         32.7           98.5         97.7         96.2         100         97.7         89.6         100         90.5         100         90.6         100         96.6         97.8         100         96.8           5         33         2         0         40         4         0         5         0         9         0         27         2         0         29           1.5         2.1         2.6         0         2         8.3         0         7.9         0         7.7         0         3         1.5         0         2.8           0         3         1         0         4         1         0         4         0         2         0         0         3         1         0         0         4  | Apprch %             | 17   | 78.9 | 4              | 0.1 |            | 41   | 3.4   | 53.8            | 1.7 |           | 0.7  | 86.3 | 12.9      | 0.1 |           | 51.7 | 15   | 28.3        | വ    |            |            |
| 98.5         97.7         96.2         100         97.7         89.6         100         90.5         100         90.6         100         96.6         97.8         100         96.8           5         33         2         0         40         4         0         5         0         9         0         27         2         0         29           1.5         2.1         2.6         0         2         9         0         7.7         0         3         1.5         0         2.8           0         3         1         0         4         1         0         1         0         0         3         1         0   | Total %              | 10.5 | 48.7 | 2.5            | 0   | 61.7       | 1.5  | 0.1   | 8               | 0.1 | 3.7       | 0.2  | 28.2 | 4.2       | 0   | 32.7      | -    | 0.3  | 0.5         | 0.1  | 1.9        |            |
| 98.5         97.7         96.2         100         97.7         89.6         100         90.5         100         90.6         100         96.8         100         96.8           5         33         2         0         40         4         0         5         0         9         0         27         2         0         29           1.5         2.1         2.6         0         2         0         7.7         0         3         1.5         0         2.8           0         3         1         0         4         1         0         1         0         0         3         1         0         0         4  | Passenger Vehicles   |      |      |                |     |            |      |       |                 |     |           |      |      |           |     |           |      |      |             |      | ,          |            |
| 5 33 2 0 40 4 0 5 0 9 0 27 2 0 29<br>1.5 2.1 2.6 0 2 8.3 0 7.9 0 7.7 0 3 1.5 0 2.8<br>0 3 1 0 4 1 0 1 0 2 0 3 1 0 4   | % Passenger Vehicles | 98.5 | 97.7 | 96.2           | 100 | 7.76       | 9.68 | 100   | 90.5            | 100 | 90.6      | 100  | 9.96 | 97.8      | 5   | 96.8      | 96.8 | 88.9 | 94.1        | 8    | 95         | 97.1       |
| 1.5 2.1 2.6 0 2 8.3 0 7.9 0 7.7 0 3 1.5 0 2.8 0 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0   | SU Trucks & Buses    | 2    | 33   | 2              | 0   | 40         | 4    | 0     | 2               | 0   | 6         | 0    | 27   | 7         | 0   | 53        |      | -    | -           | 0    | က          | 81         |
| 0 3 1 0 4 1 0 1 0 2 0 3 1 0   | % SU Trucks & Buses  | 7.   | 2.1  | 2.6            | 0   | 2          | 8.3  | 0     | 7.9             | 0   | 7.7       | 0    | က    | <u>.</u>  | 0   | 2.8       | 3.2  | 11.1 | 5.9         | 0    | വ          | 2.6        |
| 0 00 12 0 18 0 17 0 03 07 0   | MU Trucks            | 0    | က    | -              | 0   | 4          | -    | 0     |                 | 0   | 2         | 0    | က    | -         | 0   | 4         | 0    | 0    | 0           | 0    | 0          | 10         |
| 0 1.0 0 1.1 0 0.1 0 1.2 2.1 0 0.3 0.1   | % MU Trucks          | 0    | 0.2  | <del>د</del> . | 0   | 0.2        | 2.1  | 0     | 1.6             | 0   | 1.7       | 0    | 0.3  | 0.7       | 0   | 0.4       | 0    | 0    | 0           | 0    | 0          | 0.3        |



Exit 3 Airport Connector Wolf & I-87 NB Off-Ramp

7 to 9 ΑM

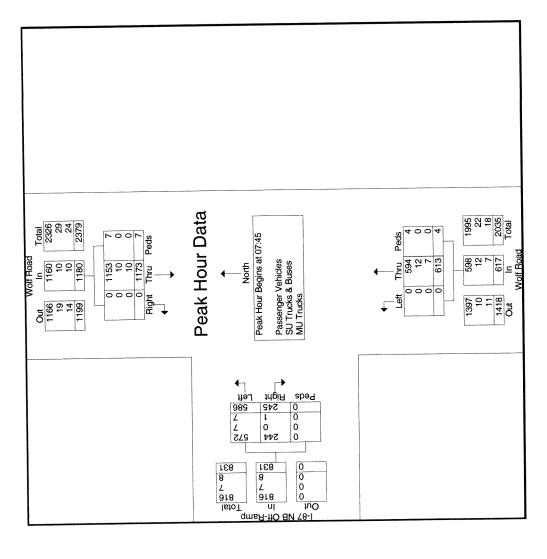
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File Name: Wolf - Exit 4 NB Off-Ramp AM

Site Code : 71106001 Start Date : 7/11/2006 Page No : 4





Exit 3 Airport Connector Wolf & I-87 NB Off-Ramp AM

7 to 9

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File Name: Wolf - Exit 4 NB Off-Ramp AM Site Code: 71106001 Start Date: 7/11/2006 Page No: 3

|  |             | 3         | Wolf Road  | 70      |                            |      | 2    | Volf Road |                 |               | WALL STATE OF THE PARTY OF THE | 1-87 N | -87 NB Off-Ramp<br>Fastbound | dme        |            |          |       |       |      |           |           |
|--|-------------|-----------|------------|---------|----------------------------|------|------|-----------|-----------------|---------------|---|--------|------------------------------|------------|------------|----------|-------|-------|------|-----------|-----------|
|  |             | တိ        | Southbound | 2       |                            |      | 2    | unoquu    | 3               |               |   | 1      |                              |            |            | 47-1     | Then. | tqv;0 | Dade | Ann Total | Int Total |
| Start Time   | Left        | Thr       | Right      | Peds    | Thru Right Peds App. Total | Left | Thru | Right     | Peds App. Total | p. Total      | Left  | Thru   | Right                        | Peds Ap    | App. Total | <b>5</b> | O BET | 100   |      | 10mm      |           |
| Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of | is From C   | 7:00 to 0 | 18:45 - Pe | ak 1 of |                            |      |      |           |                 |               |   |        |                              |            |            |          |       |       |      |           |           |
| Peak Hour for Entire Intersection Begins at 07:45  | ire Intersu | ection Be | gins at 0  | 7:45    |                            |      |      |           |                 | -             |   | 9      |                              | •          | 173        | 156      |       |       |      | 219       | 715       |
| 07:45  | 0           | 319       | 3          | S.      | 324                        |      |      | •         | (               |               | c   | 89.    | c                            | <b>t</b> C | 144        | 3 4      | C     | 62    | 0    | 206       | 644       |
| 08:00  | 0           | 294       | 0          | 0       | 594                        | 0    | 0    | <b>-</b>  | <b>&gt;</b> (   | > 0           | > 0   | 1 0    | > <                          | o c        | 153        | 4        | 0     | 69    | 0    | 213       | 651       |
| 08:15  | 0           | 282       | 0          | 0       | 282                        | 0    | 0 (  | 0 (       | <b>&gt;</b> (   | <b>-</b>      | <b>&gt;</b>   | S 2    | o c                          | o c        | 148        | 142      | 8     | 51    | 0    | 195       | 620       |
| 08:30  | 0           | 275       | 0          | Ŋ       | 277                        | 0    | 0    | 0         | 0               | 5             |   | 140    | 0                            | 7          | 617        | 586      | 2     | 245   | 0    | 833       | 2630      |
| Total Volume                                       | 0           | 1173      | 0          | 7       | 1180                       | 0    | 0    | <b>O</b>  | <b>&gt;</b> (   | >             | > 0   | 2 5    | > <                          | ט ל        | 5          | 203      | 0     | 29.4  | 0    |           |           |
| % App. Total                                       | 0           | 99.4      | 0          | 9.0     |                            | 0    | 0    | 0         | 0               | 000           | 0   | 4.65   |                              | 0.00       | 207        | 030      | 250   | 888   | 000  | .951      | .920      |
| 出  | 000         | .919      | 000        | .350    | .910                       | 89   | 80.  | 000       | 000             | 39,           | 3   | 3 2    | 3                            | 003        | 202<br>202 | 575      | 0     | 244   | 0    | 818       | 2576      |
| Passenger Vehicles                                 | 0           | 1153      | 0          | 7       | 1160                       | 0    | 0    | 0         | o (             | <b>&gt;</b> ( | <b>&gt;</b>   | 46.0   | > 0                          | † 5        | 0 9        | 97.6     | 1 0   | 966   | 0    | 98.2      | 97.9      |
| % Passenger Vehicles                               | 0           | 98.3      | 0          | 100     | 98.3                       | 0    | 0    | 0 (       | <b>o</b> (      | <b>&gt;</b> ( | <b>&gt;</b>   | 90.0   | <b>&gt;</b> C                | 3 <        | 5.5        | 5.7      | 3     | 0     | 0    | 7         | 53        |
| SU Trucks & Buses                                  | 0           | 10        | 0          | 0       | 10                         | 0    | 0    | <b>-</b>  | <b>&gt;</b> (   | <u> </u>      | > <   | ų c    | > <                          | o c        | 10         | . 0      | 0     | 0     | 0    | 0.8       | 1.1       |
| % SU Trucks & Buses                                | 0           | 6.0       | 0          | 0       | 0.8                        | 0    | 0    | 0         | <b>)</b>        | <b>O</b>      | > 0   | ,<br>, | > <                          | o c        | ? ^        | -        | · C   | -     | 0    | 80        | 25        |
| MU Trucks  | 0           | 10        | 0          | 0       | 10                         | 0    | 0    | 0         | <b>&gt;</b> (   | > 0           | > 0   | ~ +    | <b>&gt;</b>                  | > <        | - +        | - 0      | · c   | 0.4   | 0    | 1.0       | 1.0       |
| % MU Trucks  | 0           | 6.0       | 0          | 0       | 0.8                        | 0    | 0    | 0         | >               | 5             | >   | =      | >                            | >          | :          | !        | ,     |       |      |           |           |



Exit 3 Airport Connector Wolf & I-87 NB Off-Ramp

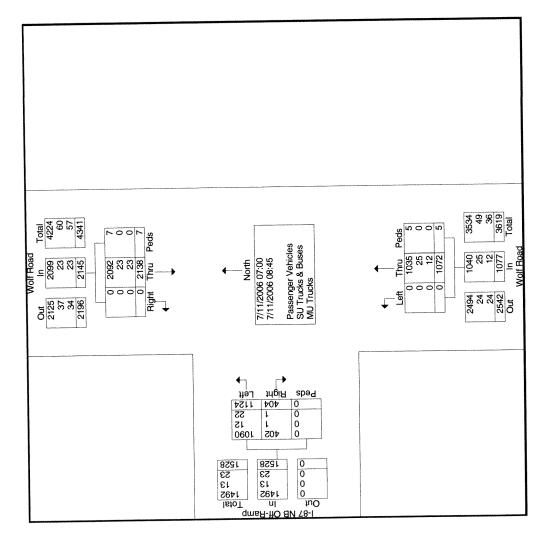
AM 7 to 9

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File Name: Wolf - Exit 4 NB Off-Ramp AM

Site Code : 71106001 Start Date : 7/11/2006 Page No : 2





Exit 3 Airport Connector Wolf & I-87 NB Off-Ramp

AM 7 to 9

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File Name: Wolf - Exit 4 NB Off-Ramp AM Site Code: 71106001 Start Date: 7/11/2006 Page No: 1

|                |        |             |          |            | Groups        | Printec | 1- Passe      | Groups Printed- Passenger Vehicles - SU Trucks & Buses - MU Trucks | icles - 5     | SU Truc       | ks & Bu  | Ises - MI        | J Truck  | S          |      |      |       |               |  |   |
|----------------|--------|-------------|----------|------------|---------------|---------|---------------|--|---------------|---------------|----------|------------------|--|------------|------|------|-------|---------------|--|---|
| Wolf Road      | folf R | oa          | 70       |            |               | ×       | Wolf Road     |  |               |               | N 28-1   | I-87 NB Off-Ramp | dwe  |            |      |      |       |               |  |   |
| Southbound     | uthbo  | =           | p        |            |               | Š       | Jorthbound    | 0  |               |               | Ea       | Eastbound        | A. Control of the Con |            |      |      |       | - 1           |  |   |
| Thru Right     | Righ   | -           | eds      | App. Total | Left          | Thru    | Right         | Peds App   | App. Total    | Left          | Thru     | Right            | Peds /   | App. Total | re#  | Thru | Right |               |  | mt. rotal   |
|                | b      | -<br>-      |          | 189        | 0             | 0       | 0             | 0  | 0             | 0             | 82       | 0                | 0  | 82         | 114  | 0 (  | 2 5   | <b>&gt;</b> 0 | 000  | 204<br>204<br>204   |
| 25.5           |        | o           | o        | 251        | 0             | 0       | 0             | 0  | 0             | 0             | 109      | 0                | 0  | 60         | 126  | 0 '  | 42    | <b>&gt;</b> 0 | 8 5  | 020   |
| 22.0           |        | o c         | o c      | 25.4       | c             | · C     | C             | 0  | 0             | 0             | 105      | 0                | 0  | 105        | 146  | 0    | 46    | <b>&gt;</b> ( | 78-  | 00.7  |
| 404            |        | > <         | > и      | 100        | o c           | o C     | o C           | c  | 0             | 0             | 168      | 0                | 4  | 172        | 156  | 0    | ည     | 0             | 219  | 617   |
| 1013           |        | 0           | က        | 1018       | 0             | 0       | 0             | 0  | 0             | 0             | 467      | 0                | 4  | 471        | 542  | 0    | 172   | 0             | /14  | 2203  |
|                |        |             |          |            | •             | (       | ć             | ¢  | c             | c             | 77       | c                | C  | 144        | 144  | 0    | 62    | 0             | 206  | 644   |
| 294            |        | 0           | 0        | 294        | 0             | >       | <b>&gt;</b> ( | 0 (  | > 0           | > <           | 1 5      | o c              | o c  | 153        | 144  | C    | 69    | 0             | 213  | 651   |
| 285            |        | 0           | 0        | 285        | 0             | 0       | ۰ د           | <b>)</b>   | <b>&gt;</b> 0 | <b>&gt;</b> c | 2 0      | o c              | o c  | 148        | 142  | 0    | 5     | 0             | 195  | 620   |
| 275            |        | 0           | 7        | 277        | 0             | 0       | 0             | <b>)</b>   | <b>o</b> (    | <b>&gt;</b> 0 | 5 6      | > 0              | ·  | 5 4        | , t  | ı C  | 5.5   | 0             | 202  | 634   |
| 271            |        | 0           | 0        | 271        | 0             | 0       | 0             | 0  | 0             | 0             | 20 20    | 0                | - +  | 908        | 282  | 0    | 232   | 0             | 816  | 2549  |
| 1125           |        | 0           | 7        | 1127       | 0             | 0       | 0             | 0  | <b>D</b>      | >             | c<br>S   | >                |  | 3          | 3    | ı    |       | •             | -  |   |
| (              |        | (           | ſ        |            | c             | c       | c             | c  | C             | c             | 1072     | 0                | 2  | 1077       | 1124 | 2    | 404   | 0             | 1530   | 4752  |
| 2138           |        | <b>&gt;</b> | , ,      | 2143       | <b>&gt;</b> ( | > 0     | 0             | o c  | )             | o             | 90       | · c              | 5.   |            | 73.5 | 0.1  | 26.4  | 0             |  |   |
| 99.7           |        | 0           | 0.3      |            | >             | >       | >             | ۰ د  | (             | 0 0           |          |                  | ; ;  | 7 00       | 7 20 | C    | 00    | C             | 32.2   |   |
| 45             |        | 0           | 0,1      | 45.1       | 0             | 0       | 0             | 0  | >             | 0             | 0.22     | >                | 5  | C.E. 1     |      | >    |       |               | A service of the service and a service of the servi | THE REAL PROPERTY AND ADDRESS OF THE PERSON NAMED AND ADDRESS |
| 1              |        | (           | 5        | 0.70       | c             | c       | c             | c  | C             | C             | 96.5     | 0                | 100  | 96.6       | 97   | 100  | 99.5  | 0             | 97.6   | 97.5  |
| 97.8           | -      | ١           | 3        | 97.9       |               |         |               | )  |               |               | 25       | c                | c  | 25         | 12   | 0    |       | 0             | <u>t</u>   | 61  |
| R              |        | 0           | <b>O</b> | 23         | <b>&gt;</b> ( | > 0     | > 0           | > 0  | > <           | o c           | 3 6      | o C              | o C  | 6.         | -    | 0    | 0.2   | 0             | 0.8  | £.  |
|                | }      | 0           | 0        |            | 0             | ٥       | 0             |  | 0             | 0             | 0.4      |                  | 0  | 12         | 2    | 0    |       | 0             | R  | 58  |
| 23             |        | 0           | 0        | 23         | 0             | >       | <b>-</b>      | o •  | <b>O</b> (    | > 0           | <u>.</u> | > <              | 0 0  | +          | ٥    | · C  | 00    | C             | T.   | 2   |
| <del>-</del> : |        | 0           | 0        | <u>-</u> : | 0             | 0       | 0             | 0  | <u> </u>      | >             | =        | >                | >  | -          | 4    | >    | į     | >             | ?  | _   |



Exit 3 Airport Connector Wolf Rd & Albany Shaker AM 7 to 9

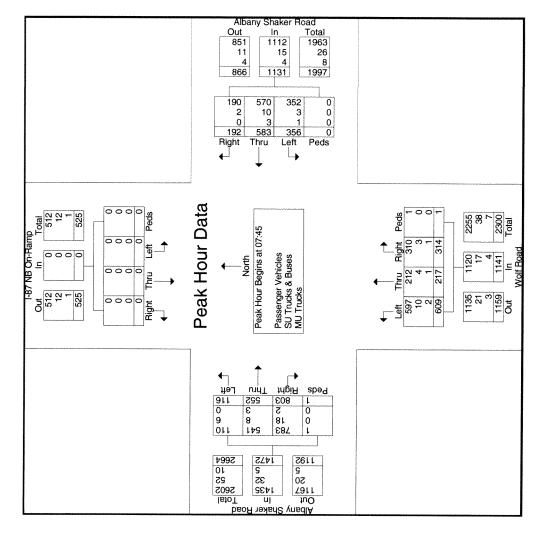
Manual Turning Movement Count Clough, Harbour & Associates LLP

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File Name: Albany Shaker - Wolf AM Site Code: 07116005

Start Date : 7/11/2006

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Exit 3 Airport Connector Wolf Rd & Albany Shaker

AM 7 to 9

Clough, Harbour & Associates LLP III Winners Circle, P.O. Box 5269 Albany, NY 12205 Manual Turning Movement Count

File Name: Albany Shaker - Wolf AM Site Code: 07116005 Start Date: 7/11/2006 Page No: 3

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| The second secon | ****               |  |
|  | WOII HOM           |  |
|  | libany Shaker Hoad |  |
|  |                    |  |
|  | I-87 NB On-Ramp    |  |

|  |            | 1-87      | I-87 NB On-Ramp | Jamp                       |            | THE REAL PROPERTY AND ADDRESS OF THE PERSON ADDRES | Albany   | Shaker Road | Road   |            |      | >            | Wolf Road    |              |            |      | Albany | Albany Shaker Road | Road      |   |  |
|--|------------|-----------|-----------------|----------------------------|------------|--|----------|-------------|--------|------------|------|--------------|--------------|--------------|------------|------|--------|--------------------|-----------|---|--|
|  |            | S         | Southbound      | <u> </u>                   |            |  | ,<br>Wε  | estbound    |        |            |      | ž            | Northbound   | 70           |            |      | Ä      | Eastbound          | 7         | A THE STREET, | Annual organization of the desired control of the second |
| Start Time   | Left       | Thru      | Right           | Thru Right Peds App. Total | vpp. Total | Left   | Thru     | Right       | Peds A | App. Total | Left | Thru         | Right        | Peds A       | App. Total | Left | Thru   | Right              | Peds      | App. Total  | Int. Total   |
| Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of | is From C  | 7:00 to 0 | 18:45 - Pe      | eak 1 of 1                 |            |  |          |             |        |            |      |              |              |              |            |      |        |                    |           |   |  |
| Peak Hour for Entire Intersection Begins at 07:45  | ire Inters | ection Be | igins at 0      | 7:45                       |            |  |          |             |        |            |      |              |              |              |            |      |        |                    |           |   | 0  |
| 07:45  | 0          | 0         | ,               | 0                          | 0          | 95   | 176      |             |        | 323        |      |              |              |              |            |      |        | 213                |           |   | 086  |
| 08:00  | · C        | C         | C               | C                          | 0          | 77   | 134      | 20          | 0      | 261        | 163  | 48           | 85           | <del>,</del> | 294        | 8    | 150    | 212                | 0         | 382   | 937  |
| 08:35  | · C        | · C       | ) C             | o C                        | · C        | 105  | 136      | 23          | 0      | 294        | 154  | 54           | 82           | 0            | 293        | 58   | 141    | 182                | 0         | 351   | 938  |
| 06.90  | o C        | o c       | o C             | o C                        | · C        | 62   | 137      | 37          | · C    | 253        | 141  | 61           | 63           | 0            | 265        | 43   | 131    | 196                | -         | 371   | 889  |
| Total Volume                                       | c          | c         | 0               | 0                          | 0          | 356  | 583      | 192         | 0      | 1131       | 609  | 217          | 314          | -            | 1141       | 116  | 552    | 803                | -         | 1472  | 3744   |
| % Ann Total  | o C        | o C       | · C             | · C                        | )          | 34.5   | 7.       | 17          | С      |            | 53.4 | 19           | 27.5         | 0.1          |            | 7.9  | 37.5   | 54.6               | 0.1       |   |  |
| S App. Folding                                     | 9          | 000       | 200             | 9                          | 000        | 848  | 828      | 906         | 000    | 875        | 934  | .889         | .924         | .250         | 970        | .674 | .920   | .942               | .250      | .963  | .955   |
|  | 9          | 200       | 9               | 0000                       | 200        | 352  | 570      | 96          | C      | 1112       | 597  | 212          | 310          | -            | 1120       | 110  | 541    | 783                | <b></b> - | 1435  | 3667   |
| rassenger verificies                               | 0 0        | o c       | 0 0             | o C                        | 0 0        | 0 80   | 8 20     | 0 66        | C      | 98.3       | 98.0 | 7.76         | 98.7         | 90           | 98.2       | 94.8 | 98.0   | 97.5               | 100       | 97.5  | 97.9   |
| % Passenger venicles                               | 0 0        | o c       | o c             | o c                        | 0 0        | )<br>)   | 5        | 0           | · C    | 7.         | Ç    | 4            | က            | 0            | 17         | 9    | æ      | 48                 | 0         | 35  | 64   |
| SO Incks & Buses                                   | <b>O</b>   | o c       | > <             | 0 0                        | 0 0        | ο α<br>- C   | <u> </u> | 1 0         | · c    | , r        | . 4  | <del>-</del> | 10           | 0            | Ť.         | 5.2  | 4.     | 2.2                | 0         | 2.5   | 1.7  |
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Wolf Rd & Albany Shaker Exit 3 Airport Connector AM

7 to 9

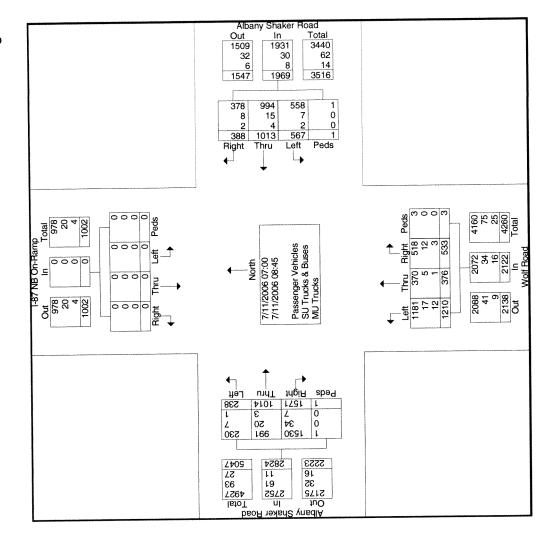
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File Name: Albany Shaker - Wolf AM Site Code : 07116005

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Exit 3 Airport Connector Wolf Rd & Albany Shaker

AM 7 to 9

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File Name: Albany Shaker - Wolf AM Site Code: 07116005 Start Date: 7/11/2006 Page No: 1

|                      |      |      |                 |               |                 | Grou    | Ips Print | Groups Printed- Passenger Vehicles - SU Trucks & Buses - MU Trucks | enger V        | ehicles -  | · SU Truc   | cks & Br | uses - M   | U Truck | Ų.         |      |        |                    |               |           |  |
|----------------------|------|------|-----------------|---------------|-----------------|---------|-----------|--|----------------|------------|-------------|----------|--|---------|------------|------|--------|--------------------|---------------|-----------|--|
|                      |      | 1-87 | I-87 NB On-Ramp | Ramp          |                 |         | Albar     | Albany Shaker Road   | r Road         |            |             | 3        | Wolf Road  | 77      |            |      | Albany | Albany Shaker Road | Road          |           |  |
|                      | -    | ഗ്   | Southbound      | pur           |                 |         |           | Westbound  | þ              |            |             | Š        | Northbound   | ğ       |            |      | , m    | Eastbound          | 70            |           |  |
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| 02:30                | 0    | 0    | 0               | 0             |                 | 0 51    | 133       | 64   | · <del>-</del> | 240        | 150         | 5 6      | 2 6  | > +     | 7000       | 7 8  | - [    | 900                | <b>&gt;</b> ( | 333       | 69/  |
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| TetoL                | c    | c    | c               |               | -               |         | 2 2       | 70   | . ح            | 020        | 0           | 40       | 46   | 0       | 682        | જ    | 130    | 213                | 0             | 368       | 086  |
|                      | >    | >    | >               | >             |                 | 238     | 480       | 35   | <del></del>    | 918        | 2/3         | 144      | 219  |         | 937        | Ξ    | 478    | 767                | 0             | 1356      | 3211   |
| 00:00                | 0    | 0    | 0               | 0             | J               | 77      | 134       | 20   | C              | 261        | 163         | 48       | 80   | •       | 700        | ć    | Ç<br>L | Č                  | c             | 000       | 0  |
| 08:15                | 0    | 0    | C               | C             |                 | 105     | 136       | 20   |                | 5 6        | 7           | 7        | 9 6  | - (     | 100        | 2 5  | 00 :   | 717                | >             | 382       | 93/  |
| 08:30                | C    |      | · c             | 0 0           | , (             | 3 6     | 3 5       | 3 1  | > (            | 707        | 10.         | 50       | င္သ  | >       | 293        | 87   | 141    | 182                | 0             | 351       | 938  |
| 00:00                | 0    | 0    | > 0             | <b>&gt;</b> ( | ۰ ر             | 6/      | 13/       | 37   | 0              | 253        | 141         | 61       | 83   | 0       | 265        | 43   | 131    | 196                | -             | 371       | 889  |
| Ct.SO                |      | > 0  | > 0             | > 0           |                 | 1       | 120       | 22   | 0              | 243        | 179         | 69       | 84   |         | 333        | 36   | 114    | 214                | 0             | 364       | 940  |
| 1010<br>1010         | >    | >    | >               | 0             | <b>&gt;</b>     | 329     | 527       | 195  | 0              | 1021       | 637         | 232      | 314  | 2       | 1185       | 127  | 536    | 804                | -             | 1468      | 3704   |
| Grand Total          | 0    | 0    | 0               | 0             | 0               | William | 1013      | 388  | •              | 1969       | 1210        | 376      | 533  | ď       | 2122       | 338  | 1017   | 1671               | •             |           | 0  |
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| lotal %              | 0    | 0    | 0               | 0             | 0               | 8.2     | 14.6      | 5.6  | 0              | 28.5       | 17.5        | 5.4      | 7.7  | 0       | 30.7       | , K  | 14.7   | 20.00              | o c           | 40 8      |  |
| Passenger Vehicles   |      |      |                 |               |                 |         |           |  |                |            |             |          | A STATE OF THE PERSON NAMED IN COLUMN NAMED IN |         |            | 5    |        | , in the second    | >             | 2.5       | VIVIETA CALLO CONTRACTOR OF SECURIOR SE |
| % Passenger Vehicles | 0    | 0    | 0               | 0             | 0               | 98.4    | 98.1      | 97.4   | 100            | 98.1       | 97.6        | 98.4     | 97.2   | 100     | 97.6       | 98.6 | 4 2 4  | 97.4               | 100           | a7 c      | 7 70   |
| SU Trucks & Buses    | 0    | 0    | 0               | 0             | O               | 7       | 15        | œ  | c              | 30         | 17          | ĸ        | 15   | 2       | 2.0        | 200  |        | 5                  | 3             | 0.70      | 1.16   |
| % SU Trucks & Buses  | C    | C    | C               | <b>C</b>      | C               | 4.0     | +         | , 4  | , (            | ) ,        |             | ,        | 1 0  | > (     | 5 :        |      | N<br>V | ţ                  | >             | ō         | 22   |
| MI Tricks            |      | 0    | 0               |               | ی ر             | _       | C         | - 1  |                | ر.<br>د.   | 1.4         | ا<br>ئ   | 2.3  | 0       | 9.         | 2.9  | N      | 2.2                | 0             | 2.2       | <del>-</del><br>8  |
| MII Tricks           | o c  | o c  | > <             | > 0           | 0 (             |         | 4 ,       | N :  | 0              | ∞          | 12          | -        | က  | 0       | 16         | -    | က      | 7                  | 0             | -         | 35   |
| SWOD LI COM OV       | >    | >    | >               | >             | ر               | 0.4     | O.4       | 0.5  | 0              | 0.4        | <del></del> | 0.3      | 9.0  | 0       | 0.8        | 0.4  | 0.3    | 0.4                | 0             | 0.4       | 0.5  |



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Albany Shaker & Old Wolf Rd

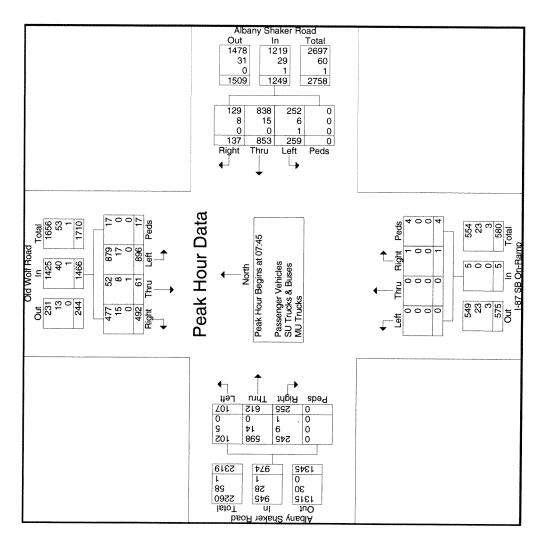
7 to 9

Exit 3 Airport Connector

File Name: Albany Shaker - Old Wolf AM Site Code : 71106003

: 7/11/2006 Start Date

Page No





Albany Shaker & Old Wolf Rd Exit 3 Airport Connector

AM 7 to 9

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File Name: Albany Shaker - Old Wolf AM Site Code: 71106003 Start Date: 7/11/2006 Page No: 3

|  | minimum property and an analysis of the second seco | C         | Old Wolf Road | peo                        |            |      | Albany | Shaker Road | Road   |            |      | I-87 S | -87 SB On-Ramp | amp     |            |              | Albany | <b>Ubany Shaker Road</b> | Road   |            |  |
|--|--|-----------|---------------|----------------------------|------------|------|--------|-------------|--------|------------|------|--------|----------------|---------|------------|--------------|--------|--------------------------|--------|------------|--|
|  |  | S         | Southbound    | pu                         |            |      |        | estbound    |        |            |      | Š      | Northbound     | ַסַ     |            |              | Ш      | Eastbound                | _      |            | Boston Andrews of the Property of the Andrews of Andrews |
| Start Time   | Left   | Thru      | Right         | Thru Right Peds App. Total | App. Total | Left | Thru   | Right       | Peds / | App. Total | Left | Thru   | Right          | Peds Ap | App. Total | Left         | Thru   | Right                    | Peds A | App. Total | Int. Total   |
| Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of | is From 07   | 7:00 to C | 38:45 - Pt    | eak 1 of 1                 | -          |      |        |             |        |            |      |        |                |         |            |              |        |                          |        |            |  |
| Peak Hour for Entire Intersection Begins at 07:45  | ire Intersec   | Stion Be  | sains at 0    | 17:45                      |            |      |        |             |        |            |      |        |                |         |            |              |        |                          |        |            |  |
| 07.45  | 219  | Ç         | 8             | 16                         |            | 75   | 235    |             |        | 329        |      |        |                |         |            | 37           | 175    |                          |        | 27         |  |
| 00.80  | 25.2   | 2 5       | 9 9           | 2 0                        | 422        | : E  | 200    | 83          | 0      | 316        | 0    | 0      |                | က       | 4          | 23           | 131    | 26                       | 0      | 506        | 951  |
| 08.15  | 24.7   | 2 -       | 5 5           | o C                        | 350        | 8 8  | 25     | 3 8         | 0      | 311        | 0    | 0      | 0              | 0       | 0          | 23           | 143    | 84                       | 0      | 250        | 911  |
| 08:30  | 2 6  | 30        | 1 5           | •                          | 351        | 2.50 | 88     | 54          | 0      | 293        | 0    | 0      | 0              | -       | -          | 52           | 163    | 26                       | 0      | 244        | 688  |
| Total Volume                                       | 968  | 61        | 492           | 17                         | 1466       | 259  | 853    | 137         | 0      | 1249       | 0    | 0      | -              | 4       | 2          | 107          | 612    | 255                      | 0      | 974        | 3694   |
| % Ann Total  | _  | 4 2       | 33.6          | 1.2                        |            | 20.7 | 68.3   | -           | 0      |            | 0    | 0      | 50             | 8       |            | <del>-</del> | 62.8   | 29.5                     | 0      |            |  |
| HH DHE   | -  | 508       | 769           | 266                        | 868        | .863 | .907   | .634        | 000    | .949       | 000  | 000    | .250           | .333    | .313       | .723         | .874   | .759                     | 00.    | 839        | .971   |
| December Vehicles                                  |  | 52        | 477           | 17                         | 1425       | 252  | 838    | 129         | 0      | 1219       | 0    | 0      | -              | 4       | 5          | 102          | 598    | 245                      | 0      | 945        | 3594   |
| P. Desender Vehicles                               | 98.5   | 85.2      | 97.0          | 100                        | 97.2       | 97.3 | 98.2   | 94.2        | 0      | 97.6       | 0    | 0      | 90             | 100     | 100        | 95.3         | 97.7   | 96.1                     | 0      | 97.0       | 97.3   |
| CII Tricks & Buses                                 | 17   | 00        | 7             | C                          | 40         | 9    | 15     | ∞           | 0      | 56         | 0    | 0      | 0              | 0       | 0          | S            | 4      | თ                        | 0      | 28         | 97   |
| SO Harris & Duese                                  | 0  | 13.1      | 30            | 0                          | 2.7        | 2.3  | 8      | 5.8         | 0      | 2.3        | 0    | 0      | 0              | 0       | 0          | 4.7          | 2.3    | 3.5                      | 0      | 2.9        | 2.6  |
| MII Trucks   | · C  | · •       | 0             | 0                          | i          | ·    | 0      | 0           | 0      | -          | 0    | 0      | 0              | 0       | 0          | 0            | 0      | -                        | 0      | -          | က  |
| % MU Trucks  | 0  | 1.6       | 0             | 0                          | 0.1        | 4.0  | 0      | 0           | 0      | 0.1        | 0    | 0      | 0              | 0       | 0          | 0            | 0      | 0.4                      | 0      | 0.1        | 0.1  |



Albany Shaker & Old Wolf Rd Exit 3 Airport Connector

AM 7 to 9

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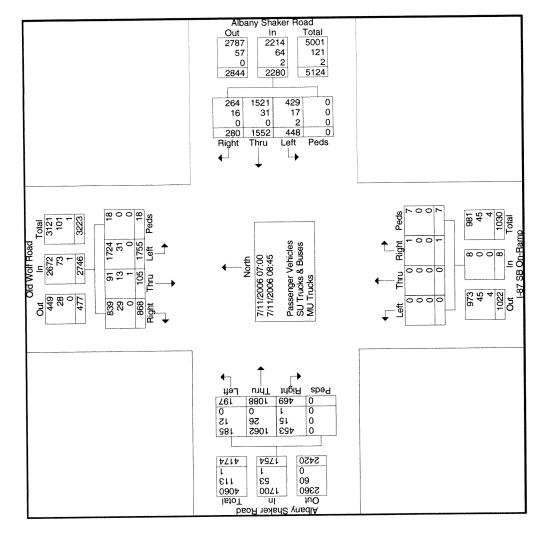
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File Name: Albany Shaker - Old Wolf AM Site Code: 71106003

: 7/11/2006 : 2 Start Date

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Exit 3 Airport Connector Albany Shaker & Old Wolf Rd AM 7 to 9

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File Name: Albany Shaker - Old Wolf AM Site Code: 71106003 Start Date: 7/11/2006 Page No: 1

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|--|-----------------------------|-----------------|------|--------|---------------|---------|------------|------|----------|-----------------|---------|------------|------|-------|--------------------|--------|------------|---|
| Left Thr<br>196<br>179<br>256<br>179<br>219<br>1850<br>3<br>252<br>217<br>208<br>3<br>228<br>228<br>228<br>228<br>208<br>3 | uthbound<br>Bight Be        |                 |      |        |               |         | -          |      | Ď<br>P   | I-8/ SB On-Hamp | dur     |            |      |       |                    | 5      |            |   |
| Left Thru 196 6 179 5 256 12 219 10 850 33 252 10 277 11 208 30 228 21 905 72  | 1                           |                 |      | ×      | estbound      |         |            |      | <u>ō</u> | Northbound      | ס       |            |      | ш     | Eastbound          |        |            | Notice de semination de construction de la const |
| 196<br>179<br>256<br>219<br>850<br>252<br>217<br>208<br>228<br>905   |                             | Peds App. Total | Left | Thru   | Right         | Peds Ap | App. Total | Left | Thru     | Right           | Peds Ap | App. Total | Left | Thru  | Right              | Peds A | App. Total | Int. Total  |
| 256<br>219<br>850<br>850<br>252<br>217<br>208<br>228<br>905  | To the second               |                 | L    | 176    | 39            | 0       | 258        | 0    | 0        | 0               | 3       | 3          | 25   | 26    | 99                 | 0      | 149        | 708   |
| 256<br>850<br>850<br>252<br>217<br>208<br>228<br>905   |                             |                 |      | 148    | 32            | 0       | 222        | 0    | 0        | 0               | 0       | 0          | 24   | 119   | 9                  | 0      | 203        | 691   |
| 219<br>850<br>252<br>217<br>208<br>228<br>905  |                             | 0 379           |      | 181    | 34            | 0       | 254        | 0    | 0        | 0               | 0       | 0          | 18   | 115   | 41                 | 0      | 174        | 807   |
| 850<br>252<br>217<br>208<br>228<br>905   | 98                          |                 | 75   | 235    | 19            | 0       | 329        | 0    | 0        | 0               | 0       | 0          | 37   | 175   | 29                 | 0      | 271        | 943   |
| 252<br>217<br>208<br>228<br>905  |                             | 16 1286         |      | 740    | 124           | 0       | 1063       | 0    | 0        | 0               | ო       | က          | 104  | 503   | 190                | 0      | 797        | 3149  |
| 217<br>208<br>228<br>905   | 160                         | 0 422           |      | 220    | 33            | 0       | 316        | 0    | 0        |                 | ო       | 4          | 22   | 131   | 56                 | 0      | 508        | 951   |
| 208<br>228<br>905  | 122                         | 0 350           |      | 210    | 31            | 0       | 311        | 0    | 0        | 0               | 0       | 0          | 23   | 143   | 84                 | 0      | 250        | 911   |
| 228<br>905   | 112                         | 1 351           | 51   | 188    | 54            | 0       | 293        | 0    | 0        | 0               |         |            | 52   | 163   | 26                 | 0      | 244        | 889   |
| 902  | 87                          | 1 337           |      | 194    | 88            | 0       | 297        | 0    | 0        | 0               | 0       | 0          | 83   | 148   | 83                 | 0      | 254        | 888   |
|  | 481                         | 2 1460          |      | 812    | 156           | 0       | 1217       | 0    | 0        | -               | 4       | 5          | 93   | 585   | 279                | 0      | 957        | 3639  |
|  |                             | 18 2746         |      | 1552   | 280           | 0       | 2280       | 0    | 0        | -               | 7       | 8          | 197  | 1088  | 469                | 0      | 1754       | 6788  |
| Apprch % 63.9 3.8  | 31.6 0                      | 0.7             | 19.6 | 68.1   | 12.3          | 0       |            | 0    | 0        | 12.5            | 87.5    |            | 11.2 | 62    | 26.7               | 0      |            |   |
|  |                             | 3 40.5          |      | 22.9   | 4.1           | 0       | 33.6       | 0    | 0        | 0               | 0.1     | 0.1        | 5.9  | 16    | 6.9                | 0      | 25.8       |   |
| Passenger Vehicles   |                             |                 |      |        |               |         |            |      |          |                 |         |            |      |       |                    |        |            |   |
| % Passenger Vehicles 98.2 86.7   | 96.7 10                     | 100 97.3        | 95.8 | 86     | 94.3          | 0       | 97.1       | 0    | 0        | 9               | 100     | 100        | 93.9 | 97.6  | 9.96               | 0      | 6.96       | 97.1  |
|  | 29                          | 0 73            |      | 34     | 16            | 0       | 64         | 0    | 0        | 0               | 0       | 0          | 12   | 26    | 15                 | 0      | 23         | 190   |
| % SU Trucks & Buses 1.8 12.4   | 3.3                         | 0 2.7           | 3.8  | ς,     | 2.7           | 0       | 2.8        | 0    | 0        | 0               | 0       | 0          | 6.1  | 2.4   | 3.5                | 0      | က          | 2.8   |
| MU Trucks 0 1  | 0                           | 0               | 7    | 0      | 0             | 0       | 2          | 0    | 0        | 0               | 0       | 0          | 0    | 0     | -                  | 0      | •          | 4   |
| % MU Trucks 0 1  | 0                           | 0               | 0.4  | 0      | 0             | 0       | 0.1        | 0    | 0        | 0               | 0       | 0          | 0    | 0     | 0.2                | 0      | 0.1        | 0.1   |



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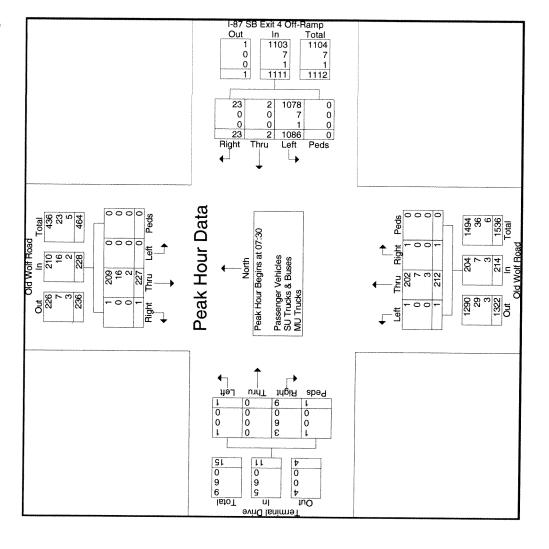
Old Wolf Rd & I-87 SB Exit 4 Off-Ramp

AM 7 to 9

Exit 3 Airport Connector

File Name: Old Wolf - Exit 4 SB AM

Site Code : 62906007 Start Date : 6/29/2006 Page No : 4





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Exit 3 Airport Connector Old Wolf Rd & I-87 SB Exit 4 Off-Ramp

AM 7 to 9

File Name: Old Wolf - Exit 4 SB AM Site Code: 62906007

Start Date : 6/29/2006 Page No : 3

|  |            | ŏ        | Old Wolf Road              | oad      |            | _    | I-87 SB E | Exit 4 Off-Ramp | f-Ramp |            |      | PIO  | Old Wolf Road | ad              |           |  | Terr | <b>Terminal Drive</b> | ive      |                 |            |
|--|------------|----------|----------------------------|----------|------------|------|-----------|-----------------|--------|------------|------|------|---------------|-----------------|-----------|--|------|-----------------------|----------|-----------------|------------|
|  |            | Ø        | Southbound                 | pu       |            |      | Š         | estbound        | 70     |            |      | ž    | Northbound    | ō               |           |  | ŭ    | Eastbound             | 7        |                 |            |
| Start Time   | Left       | Thru     | Thru Right Peds App. Total | Peds     | App. Total | Left | The       | Right           | Peds 4 | App. Total | Left | Thru | Right         | Peds App. Total | pp. Total | Left                                   | Thru | Right                 | Peds /   | Peds App. Total | Int. Total |
| Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of | is From C  | 7:00 to  | 08:45 - Pe                 | eak 1 of |            |      |           |                 |        |            |      |      |               |                 |           | ************************************** |      |                       |          |                 |            |
| Peak Hour for Entire Intersection Begins at 07:30  | ire Inters | ection B | egins at 0                 | 7:30     |            |      |           |                 |        |            |      |      |               |                 |           |  |      |                       |          |                 |            |
| 02:30  | 0          | 47       | 0                          | 0        | 47         | 249  | ~         | 9               |        |            | -    |      | -             | ,               |           |  |      |                       |          |                 |            |
| 07:45  | 0          | 29       | 0                          | 0        | 29         | 279  |           | 9               | 0      | 586        | 0    | 28   | 0             | 0               | 28        | 0                                      | 0    | 4                     | 0        | 4               | 407        |
| 08:00  | 0          | 69       |                            | 0        | 2          | 277  | 0         | ß               | 0      | 282        | 0    | 25   | 0             | 0               | 25        | -                                      | 0    | 0                     |          | 8               | 406        |
| 08:15  | 0          | 52       | 0                          | 0        | 52         | 281  | 0         | 9               | 0      | 287        | 0    | 25   | 0             | 0               | 25        | 0                                      | 0    | 8                     | 0        | 2               | 393        |
| Total Volume                                       | 0          | 227      | -                          | 0        | 228        | 1086 | 2         | 23              | 0      | 1111       | -    | 212  | -             | 0               | 214       | -                                      | 0    | 0                     | T        | -               | 1564       |
| % App. Total                                       | 0          | 9.66     | 0.4                        | 0        |            | 7.76 | 0.5       | 2.1             | 0      |            | 0.5  | 99.1 | 0.5           | 0               |           | 9.1                                    | 0    | 81.8                  | 9.1      |                 |            |
| Ħ  | 000.       | .822     | .250                       | 000:     | .814       | 996. | .500      | .958            | 000    | 896.       | .250 | .914 | .250          | 000             | .922      | .250                                   | 000  | .563                  | .250     | .688            | .961       |
| Passenger Vehicles                                 | 0          | 209      | -                          | 0        | 210        | 1078 | 2         | ಜ               | 0      | 1103       | -    | 202  | -             | 0               | 204       | -                                      | 0    | က                     | <b>,</b> | Ŋ               | 1522       |
| % Passenger Vehicles                               | 0          | 92.1     | 100                        | 0        | 92.1       | 99.3 | 9         | 100             | 0      | 99.3       | 9    | 95.3 | 901           | 0               | 95.3      | 9                                      | 0    | 33.3                  | 100      | 45.5            | 97.3       |
| SU Trucks & Buses                                  | 0          | 16       | 0                          | 0        | 16         | 7    | 0         | 0               | 0      | 7          | 0    | 7    | 0             | 0               | 7         | 0                                      | 0    | 9                     | 0        | 9               | 36         |
| % SU Trucks & Buses                                | 0          | 7.0      | 0                          | 0        | 7.0        | 9.0  | 0         | 0               | 0      | 9.0        | 0    | 3.3  | 0             | 0               | 3.3       | 0                                      | 0    | 2.99                  | 0        | 54.5            | 2.3        |
| MU Trucks  | 0          | 7        | 0                          | 0        | 7          |      | 0         | 0               | 0      | *          | 0    | က    | 0             | 0               | က         | 0                                      | 0    | 0                     | 0        | 0               | 9          |
| % MU Trucks  | 0          | 6.0      | 0                          | 0        | 6.0        | 0.1  | 0         | 0               | 0      | 0.1        | 0    | 4.   | 0             | 0               | 4.        | 0                                      | 0    | 0                     | 0        | 0               | 0.4        |



## Clough, Harbour & Associates LLP Manual Turning Movement Count

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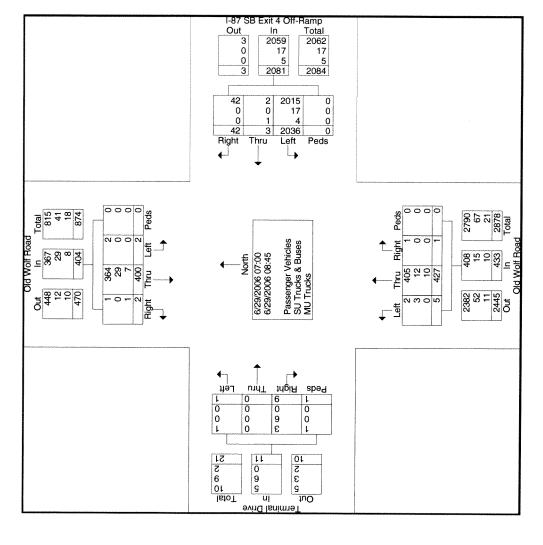
Old Wolf Rd & I-87 SB Exit 4 Off-Ramp

7 to 9

Exit 3 Airport Connector

File Name: Old Wolf - Exit 4 SB AM Site Code : 62906007

Start Date : 6/29/2006 Page No : 2





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Exit 3 Airport Connector Old Wolf Rd & I-87 SB Exit 4 Off-Ramp AM 7 to 9

File Name: Old Wolf - Exit 4 SB AM Site Code: 62906007

Start Date : 6/29/2006 Page No : 1

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|  |   | ő  | Old Wolf Road | load |   |       | I-87 SB [            | Exit 4 Off-Ramp | f-Ramp   |  |         | ᆼ        | Old Wolf Road | ad      |            |   | Tern | <b>Terminal Drive</b> | ive  | Valley to a state of the state |            |
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| Start Time   | Left                                    | Thru   | Right         |      | Peds App. Total                         | Left  | Thru                 | Right           | Peds A   | App. Total   | Left    | Thru     | Right         | Peds A  | App. Total | Left                                    | Thru | Right                 | Peds   | App. Total  | Int. Total |
| 00:20  | 0                                       | 36   | 0             | 0    | 36                                      |       | -                    | 7               | 0        | 209  | 2       | 63       | 0             | +       | 65         |   | c    | C                     | -4   | <del></del> -   | 310        |
| 07:15  | 0                                       | 27   | 0             | 0    | 27                                      |       | 0                    | 4               | 0        | 258  | 0       | 47       | 0             | C       | 47         | · c                                     | · C  | · C                   | · C  | 0 0   | 333        |
| 02:30  | 0                                       | 47   | 0             | 0    | 47                                      |       | -                    | 9               | 0        | 256  |         | 20       | ·             | · c     | 52         | o C                                     | o c  | o e                   | o c  | יי כ  | 358        |
| 07:45  | 0                                       | 29   | 0             | 0    | 59                                      | 279   |                      | 9               | 0        | 286  | 0       | 28       | . 0           | 0       | 1 80       | 0 0                                     | o C  | 0 4                   | o c  | ) A   | 336        |
| Total  | 0                                       | 169  | 0             | 0    | 169                                     |       | ო                    | 23              | 0        | 1009   | က       | 218      | -             | 0       | 222        | 0                                       | 0    | 7                     | 0  | 7   | 1407       |
| 08:00  | 0                                       | 69   | -             | 0    | 70                                      | 277   | 0                    | 5               | 0        | 282  | 0       | 52       | 0             | o       | 52         | •                                       | c    | c                     | *  | 0   | 406        |
| 08:12  | 0                                       | 25   | 0             | 0    | 52                                      |       | 0                    | 9               | 0        | 287  | 0       | 25       | 0             | 0       | 52         |   | · C  | ۰ ۸                   | - c  | 10  | 30,0       |
| 08:30  |   | 26   | -             | 0    | 58                                      |       | 0                    | ιΩ              | 0        | 237  | C)      | 22       | 0             | 0       | 57         | · C                                     | · C  | 1 C                   | · c  | 1 C   | 352        |
| 08:45  | -                                       | 54   | 0             | 0    | 55                                      |       | 0                    | က               | 0        | 566  | 0       | 20       | 0             | 0       | 20         | 0                                       | 0    | 0                     | · c  | · C   | 371        |
| Total  | C)                                      | 231  | 8             | 0    | 235                                     |       | 0                    | 19              | 0        | 1072   | 2       | 509      | 0             | 0       | 211        | *************************************** | 0    | 2                     |  | 4   | 1522       |
| Grand Total  | 2                                       | 400  | 8             | 0    | 404                                     |       | ო                    | 42              | 0        | 2081   | Ŋ       | 427      |               | C       | 433        | +-                                      | C    | σ                     | +  | <u> </u>  | 0000       |
| % Habbarch %   | 0.5                                     | 66   | 0.5           | 0    |   | 8.76  | 0.1                  | 8               | 0        |  | 1.2     | 98.6     | 0.2           | 0       | !          | 6                                       | 0    | 818                   | 6  | :   |            |
| Total %  | 0.1                                     | 13.7   | 0.1           | 0    | 13.8                                    |       | 0.1                  | 1.4             | 0        | 71   | 0.2     | 14.6     | 0             | 0       | 14.8       | 0                                       | 0    | 0.3                   | 0  | 0.4   |            |
| Passenger Vehicles   |   |  |               |      |   |       |                      |                 |          |  |         |          |               |         |            |   | -    |                       | And delical and an expensive degree of party and an expensive an expensive and an expensive and an expensive and an expensive an expensive and an expensive and an expensive and an expensive ane | -   |            |
| % Passenger Vehicles   | 100                                     | 91   | 20            | 0    | 90.8                                    | 66    | 2.99                 | 90              | 0        | 98.9   | 40      | 94.8     | 100           | 0       | 94.2       | 100                                     | С    | 33.3                  | 100  | 45.5  | 6 96       |
| SU Trucks & Buses  | 0                                       | 53   | 0             | 0    | 53                                      | 17    | 0                    | 0               | 0        | 17   | က       | 12       | 0             | 0       | 7.         | C                                       | 0    | 9                     | 2  | 2   | 67         |
| % SU Trucks & Buses  | 0                                       | 7.2  | 0             | 0    | 7.2                                     |       | 0                    | 0               | 0        | 0.8  | 09      | 2.8      | 0             | 0       | (C)        | · C                                     | · C  | 66.7                  | · C  | 74  | , c        |
| MU Trucks  | 0                                       | 7  | •             | 0    | 8                                       | 4     | -                    | 0               | 0        | r.   | C       | 10       | c             | c       | 10         | 0                                       | ,    |                       | )  | 2   | 0.7        |
| % MU Trucks  | 0                                       | 1.8  | 20            | 0    | 7                                       | 0.5   | 33.3                 | 0               | 0        | 0.2  | 0       | 2.3      | 0             | 0       | 2.3        | 0                                       | 0    | ) O                   | 0  | 0 0   | S C        |
|  |   |  |               |      |   |       |                      |                 |          | -  |         |          |               |         | -          | ,                                       | ,    | ,                     | <b>)</b>   | >   | ;          |



Clough, Harbour & Associates LLP

III Winners Circle, P.O. Box 5269 Albany, NY 12205 File

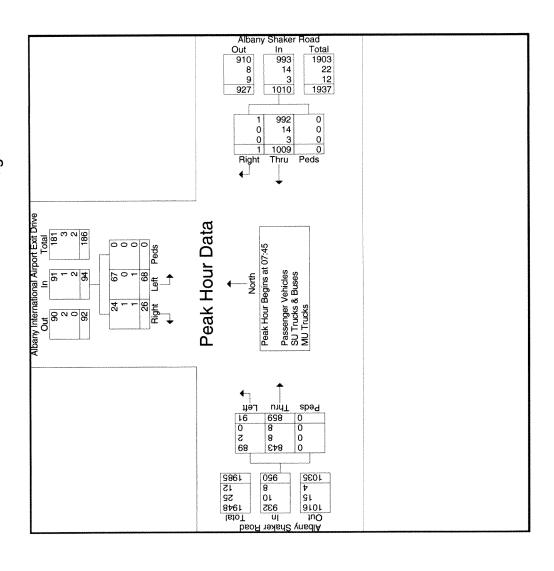
Albany Shaker - Alb Int Terminal

AM 7 to 9

Exit 3 Airport Connector

File Name: Albany Shaker - Alb Int Term Access AM Site Code : 71106009

Start Date : 7/11/2006 Page No : 4





Albany Shaker - Alb Int Terminal

AM 7 to 9

Exit 3 Airport Connector

Clough, Harbour & Associates LLP Manual Turning Movement Count

III Winners Circle, P.O. Box 5269
Albany, NY 12205
File

File Name: Albany Shaker - Alb Int Term Access AM Site Code: 71106009
Start Date: 7/11/2006
Page No: 3

| 285         0         285         0         0         0         24         201         0         0         0         24         201         0         0         0         24         201         0         0         0         0         24         201         0  | Albany International Airport Exit<br>Drive            | J.                          | iterr               | Drive         | Airport        | Exit         |      | Albany<br>We | Shaker Road<br>stbound | Road   |            |               | Albany<br>Ea | Albany Shaker Road<br>Eastbound | Road          |               |       |          |               | And an actual distance of the second | The state of the s | Annual de des contratos de la |
|--|---|-----------------------------|---------------------|---------------|----------------|--------------|------|--------------|------------------------|--------|------------|---------------|--------------|---------------------------------|---------------|---------------|-------|----------|---------------|---|--|---|
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Exit 3 Airport Connector

Albany Shaker - Alb Int Terminal AM 7 to 9

Albany, NY 12205 www.cloughharbour.com

File Name: Albany Shaker - Alb Int Term Access AM Site Code: 71106009

: 7/11/2006 Start Date Page No



Albany Shaker - Alb Int Terminal AM

7 to 9

Exit 3 Airport Connector

Manual Turning Movement Count

Clough, Harbour & Associates LLP
Ill Winners Circle, P.O. Box 5269
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File Name: Albany Shaker - Alb Int Term Access AM Site Code: 71106009
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Page No: 1

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|--|----------------|---|-----------------------------------|-----------|------------|-------|----------|--------------------|---------|--|---------|---------|--------------------|--------|------------|---|--|-------|--------|------------|------------|
|  | Alba           | iny Inter                               | Albany International Airport Exit | ıl Airpor | t Exit     |       | Albany   | Albany Shaker Road | Road    |  |         | Albany  | Albany Shaker Road | Road   |            |   |  |       |        |            |            |
|  |                | ŏ                                       | Southbound                        | pu        |            |       | ≷        | Westbound          | ס       |  |         | Е       | Eastbound          | T      |            |   |  |       |        |            |            |
| Start Time   | Left           | Thru                                    | Right                             | Peds      | App. Total | Left  | Thru     | Right              | Peds    | App. Total   | Left    | Thru    | Right              | Peds A | App. Total | Left  | Thru   | Right | Peds A | App. Total | Int. Total |
| 00:00  | ಣ              | 0                                       | æ                                 | 0         | 31         | 0     | 148      | 0                  | +       | 148  | 0       | 0       | 0                  | 0      | 0          | 16  | 142  | 0     | -      | 158        | 337        |
| 07:15  | 9              | 0                                       | =                                 | 0         | 23         | 0     | 165      | -                  | 0       | 166  | 0       | 0       | 0                  | 0      | 0 0        | 92  | 176  | · c   | · C    | 200        | 380        |
| 02:30  | <u>-</u>       | 0                                       | 4                                 | 0         | 15         | 0     | 231      | 0                  | 0       | 231  | 0       | 0       | 0                  | 0      | 0          | 16  | 170  | 0     | 0      | 186        | 432        |
| 07:45  |                | 0                                       | 9                                 | 0         | 24         | 0     | 268      | -                  | 0       | 269  | 0       | 0       | 0                  | 0      | 0          | 27  | 220  | 0     | 0      | 247        | 540        |
| Total  | 28             | 0                                       | 33                                | 0         | 91         | 0     | 812      | 2                  | 0       | 814  | 0       | 0       | 0                  | 0      | 0          | 85  | 708  | 0     | 0      | 793        | 1698       |
| 08:00  | -              | 0                                       | 4                                 | 0         | 19         | 0     | 285      | 0                  | 0       | 285  | 0       | 0       | 0                  | 0      | 0          | 24  | 201  | 0     | 0      | 225        | 529        |
| 08:15  | 19             | 0                                       | c)                                | 0         | 24         | 0     | 243      | 0                  | 0       | 243  | 0       | 0       | 0                  | 0      | 0          | 4   | 212  | 0     | 0      | 226        | 493        |
| 08:30  |                | 0                                       | 7                                 | 0         | 27         | 0     | 213      | 0                  | 0       | 213  | 0       | 0       | 0                  | 0      | 0          | 56  | 226  | 0     | 0      | 252        | 492        |
| 08:45  | =              | 0                                       | က                                 | 0         | 41         | 0     | 202      | -                  | 0       | 208  | 0       | 0       | 0                  | 0      | 0          | 21  | 215  | 0     | 0      | 236        | 458        |
| Total  | 65             | 0                                       | 19                                | 0         | 84         | 0     | 948      | <b>,</b>           | 0       | 949  | 0       | 0       | 0                  | 0      | 0          | 85  | 854  | 0     | 0      | 626        | 1972       |
| Grand Total  | 123            | 0                                       | 52                                | 0         | 175        | 0     | 1760     | ო                  | 0       | 1763   | 0       | 0       | 0                  | 0      | 0          | 170   | 1562   | 0     | 0      | 1732       | 3670       |
| % Habbrich %   | 70.3           | 0                                       | 29.7                              | 0         |            | 0     | 8.66     | 0.2                | 0       |  | 0       | 0       | 0                  | 0      | i          | 9.6   | 90.2   | 0     | 0      | <br>}      | )<br>}     |
| Total %  | 3.4            | 0                                       | 1.4                               | 0         | 4.8        | 0     | 84       | 0.1                | 0       | 48   | 0       | 0       | 0                  | 0      | 0          | 4.6   | 42.6   | 0     | 0      | 47.2       |            |
| Passenger Vehicles   |                |   |                                   |           |            |       |          |                    |         |  |         |         |                    |        |            | TOTAL PRINTED WHEN THE | The state of the s |       | •      |            |            |
| % Passenger Vehicles   | 97.6           | 0                                       | 84.6                              | 0         | 93.7       | 0     | 98.6     | 100                | 0       | 98.6   | 0       | 0       | 0                  | 0      | 0          | 95.9  | 98.2   | 0     | 0      | 86         | 98.1       |
| SU Trucks & Buses  | 8              | 0                                       | 7                                 | 0         | 6          | 0     | 17       | 0                  | 0       | 17   | 0       | 0       | 0                  | 0      | 0          | 9   | 16   | 0     | 0      | 22         | 48         |
| % SU Trucks & Buses  | 1.6            | 0                                       | 13.5                              | 0         | 5.1        | 0     | -        | 0                  | 0       | -  | 0       | 0       | 0                  | 0      | 0          | 3.5   | -  | 0     | 0      | 1.3        | 5.0        |
| MU Trucks  | <del>-</del> ( | 0 (                                     |                                   | 0         | 0          | 0     | 7        | 0                  | 0       | 7  | 0       | 0       | 0                  | 0      | 0          | -   | 12   | 0     | 0      | 13         | 22         |
| % MU Irucks  | 0.8            | 0                                       | <del>-</del><br>6.                | 0         | <u>-</u>   | 0     | 0.4      | 0                  | 0       | 0.4  | 0       | 0       | 0                  | 0      | 0          | 9.0   | 9.0  | 0     | 0      | 9.0        | 9.0        |



## Clough, Harbour & Associates LLP

III Winners Circle, P.O. Box 5269

Albany, NY 12205 www.cloughharbour.com

Albany Shaker & Watervliet Shaker

7 to 9 ΑM

Exit 3 Airport Connector

File Name: Albany Shaker - Watervliet Shaker AM

Site Code : 62806001 Start Date : 6/28/2006 Start Date Page No

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Albany Shaker & Watervliet Shaker

AM 7 to 9

Exit 3 Airport Connector

Clough, Harbour & Associates LLP
III Winners Circle, P.O. Box 5269
Albany, NY 12205
File Na

File Name: Albany Shaker - Watervliet Shaker AM Site Code: 62806001
Start Date: 6/28/2006
Page No: 3

|  |  | Albar    | Albany Shaker Road | cer Roa  | פ         |      | Albany | Intern | International Airport Drive | Airpon | Drive                      |      | Alba | Albany Shaker Road | er Road |                                 |      | Watervi | Natervliet Shaker Road | er Road | 73   | F |
|--|--|----------|--------------------|----------|-----------|------|--------|--------|-----------------------------|--------|----------------------------|------|------|--------------------|---------|---------------------------------|------|---------|------------------------|---------|--|---|
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| Start Time Left Thru Right Peds App. Total           | Left   | Thru     | Right              | Peds     | 3 App. To | otal | Left   | Thru   | Right                       | Peds   | Thru Right Peds App. Total | Left | Thru | Right              | Peds    | Left Thru Right Peds App. Total | Left | Thru    | Right                  | Peds    | Left Thru Right Peds App. Total Int.   | ᆵ |
| Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1 | sis From (   | 07:00 to | 08:45 - 1          | Peak 1 c | Jf 1      |      |        | -      | -                           |        |                            |      |      |                    |         |                                 |      |         |                        | -       | AND THE RESIDENCE WHEN THE PROPERTY OF THE PRO |   |
| Peak Hour for Entire Intersection Begins at 07:45    | tire Inters  | ection B | legins at          | 07:45    |           |      |        |        |                             |        | *                          |      |      |                    |         |                                 |      |         |                        |         |  |   |
| 07:45  | 07:45 8  | 123      | ı                  |          |           |      |        | 9      |                             |        |                            |      |      |                    |         |                                 | 52   |         | 75                     |         | 127  |   |

|  |            | 202       | Aidally Silaker noad | ביים ביים |                            | Alban | Albany Intern | ational , | airpori L | JINe       |      | Albany                                  | libany snaker Hoad | Load   |            | >    | Vaterviie | iet Snaker Hoad | er Hoad |  |            |
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|  |            | S         | Southbound           | pun       |                            |       | Š             | estbound  | 707       |            |      | 2                                       | Northbound         | ъ      |            |      | Ea        | Eastbound       | 73      |  |            |
| Start Time   | Left       | Thru      | Right                | Peds      | Thru Right Peds App. Total | Left  | Thru          | Right     | Peds A    | App. Total | Left | Thru                                    | Right              | Peds A | App. Total | Left | Thru      | Right           | Peds A  | App. Total   | Int. Total |
| Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1 | is From    | 07:00 to  | 08:45 - F            | eak 1 of  | -                          |       | -             | -         |           |            | -    |   |                    | -      |            |      |           |                 |         | THE RESIDENCE AND THE THE PROPERTY OF THE PROP |            |
| Peak Hour for Entire Intersection Begins at 07:45    | ire Inters | section B | egins at (           | 07:45     |                            |       |               |           |           |            |      |   |                    |        |            |      |           |                 |         |  |            |
| 07:45  | 80         | 123       | )                    |           |                            |       | 9             |           |           |            |      |   |                    |        |            | 25   |           | 22              |         | 127  | 558        |
| 08:00  | 9          | 110       | 48                   | 0         | 164                        | 32    | က             | 52        | 0         | 63         | 69   | 146                                     | -                  | 0      | 216        | 46   | 0         | 89              | 0       | 114  | 557        |
| 08:15  | 9          | 117       | 43                   | 0         | 166                        | 21    | -             | 55        | 0         | 44         | 69   | ======================================= | က                  | 0      | 183        | 25   | -         | 29              | 0       | 120  | 513        |
| 08:30  | 13         | 118       | 62                   | 0         | 193                        | 31    | 2             | 17        | 0         | 23         | 23   | 109                                     | က                  | 0      | 165        | 46   | 0         | 71              | 0       | 117  | 528        |
| Total Volume   | 33         | 468       |                      | 0         | 200                        | 110   | 15            | 74        | 0         | 199        | 257  | 507                                     | တ                  | 0      | 773        | 196  | -         | 281             | 0       | 478  | 2156       |
| % App. Total   | 4.7        | 66.3      | 53                   |           |                            | 55.3  | 7.5           | 37.2      | 0         |            | 33.2 | 65.6                                    | 1.2                | 0      | :          | 4    | 0.2       | 58.8            | 0       |  |            |
| 품  | .635       | .951      | .827                 | 000.      | .915                       | .786  | .625          | .740      | 000       | .790       | .931 | .868                                    | .750               | 000    | .895       | .942 | .250      | .937            | 000     | .941   | 996        |
| Passenger Vehicles                                   | ဗ္ဗ        | 462       | 204                  | 0         | 669                        | 110   | 14            | 72        | 0         | 196        | 250  | 200                                     | 6                  | 0      | 759        | 193  | -         | 280             | 0       | 474  | 2128       |
| % Passenger Vehicles                                 | 100        | 98.7      | 99.5                 | 0         | 0.66                       | 100   | 93.3          | 97.3      | 0         | 98.5       | 97.3 | 98.6                                    | 100                | 0      | 98.2       | 98.5 | 100       | 966             | 0       | 99.2   | 98.7       |
| SU Trucks & Buses                                    | 0          | 4         | •                    | 0         | 2                          | 0     | 0             |           | 0         | _          | 7    | 9                                       | 0                  | 0      | 5          | 7    | 0         | -               | 0       | က  | 22         |
| % SU Trucks & Buses                                  | 0          | 0.9       | 0.5                  | 0         | 0.7                        | 0     | 0             | 4.        | 0         | 0.5        | 2.7  | 1.2                                     | 0                  | 0      | 1.7        | 1.0  | 0         | 0.4             | 0       | 9.0  | 1.0        |
| MU Trucks  | 0          | 2         | 0                    | 0         | 0                          | 0     | •             | _         | 0         | 2          | 0    | -                                       | 0                  | 0      | -          | -    | 0         | 0               | 0       | -  | 9          |
| % MU Trucks  | 0          | 0.4       | 0                    | 0         | 0.3                        | 0     | 6.7           | 4.        | 0         | 1.0        | 0    | 0.2                                     | 0                  | 0      | 0.1        | 0.5  | 0         | 0               | 0       | 0.2  | 0.3        |
|  |            |           |                      |           |                            |       |               |           |           |            |      |   |                    |        |            |      |           |                 |         |  |            |



Clough, Harbour & Associates LLP

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Albany, NY 12205

Albany Shaker & Watervliet Shaker

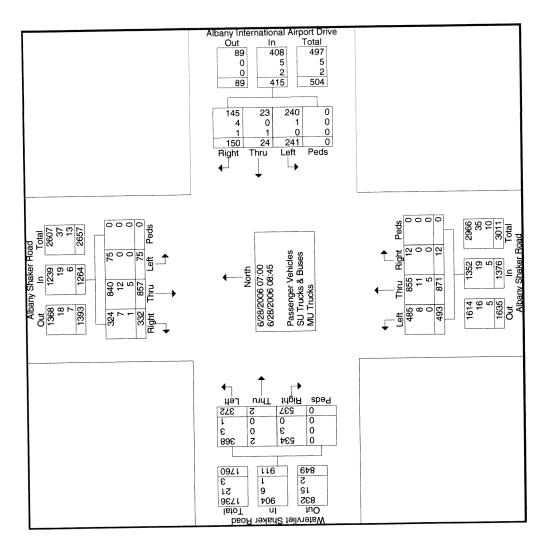
7 to 9 ΑM

Exit 3 Airport Connector

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File Name: Albany Shaker - Watervliet Shaker AM

Site Code : 62806001 Start Date : 6/28/2006 Page No : 2 Start Date Page No





## Clough, Harbour & Associates LLP Ill Winners Circle, P.O. Box 5269 Albany, NY 12205 File Ne

Albany Shaker & Watervliet Shaker

AM 7 to 9

Exit 3 Airport Connector

File Name: Albany Shaker - Watervliet Shaker AM Site Code: 62806001 Start Date: 6/28/2006 Page No: 1

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|---|---|-----------------|---|-------|---------------|--------|------------|-----------|--|------------|---------|---------|--------------------|---------|------------|----------|---------|------------------------|---------|------------|--|
| Albany Shaker Road                      | any Shaker Road                         | naker Road      | oad   |       |               | Albany | Interne    | itional A | Albany International Airport Drive                                 | rive       |         | Albany  | Albany Shaker Road | Road    |            | 5        | atervli | Watervliet Shaker Road | er Road |            |  |
| S<br>S                                  | Southbound                              | punoq           |   |       |               |        | We         | Westbound |  |            |         | Š       | Northbound         | 70      |            |          | Ē       | Eastbound              | ס       |            |  |
| Thru Right Peds App. Total              | Right Peds App. Total                   | Peds App. Total | App. Total                                  |       | ت             | Left   | Thru       | Right     | Peds Apy   | App. Total | Left    | Thru    | Right              | Peds A  | App. Total | Left     | Thru    | Right                  | Peds    | App. Total | Int. Total   |
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| 84 18 0 111                             | 18 0 111                                | 0 1111          | 11  |       | ဗ္ဗ           |        |            | 21        | 0  | 28         | 48      | 71      | 2                  | 0       | 121        | 53       | 0       | 9                      | 2       | 80         | 370  |
| 99 34 0 145                             | 34 0 145                                | 0 145           | 145   |       | 88            |        | 7          | 88        | 0  | 89         | 54      | 91      | 0                  | 0       | 145        | 4        | 0       | 99                     | 0       | 110        | 468  |
| 10 101 30 0 141 31                      | 30 0 141                                | 0 141           | 141   |       | 9             |        | 7          | 9         | 0  | 43         | 71      | 91      | 0                  | 0       | 162        | 44       | 0       | 81                     | 0       | 125        | 471  |
| 123 52 0 183                            | 183                                     | 0 183           | 183   | ľ     | 83            |        | 9          | 9         | 0  | 39         | 99      | 141     | 7                  | 0       | 509        | 25       | 0       | 75                     | 0       | 127        | 558  |
| 40/ 134 0                               | 134 0 580                               | 089             | 280   |       | 128           |        | =          | 69        | 0  | 508        | 239     | 394     | 4                  | 0       | 637        | 169      | 0       | 282                    | 0       | 451        | 1876   |
| 110 48 0 164                            | 48 0 164                                | 0 164           | 164   |       | 35            |        | က          | 22        | 0  | 63         | 69      | 146     |                    | 0       | 216        | 46       | 0       | 89                     | С       | 114        | 557  |
| 117 43 0 166                            | 43 0 166                                | 0 166           | 166   |       | 21            |        | -          | 23        | 0  | 4          | 69      | 111     | ო                  | 0       | 183        | 25       | -       | 29                     | · C     | 12         | 513  |
| 118 62 0 193                            | 62 0 193                                | 0 193           | 193   |       | 31            |        | 2          | 17        | 0  | 53         | 53      | 109     | ო                  | 0       | 165        | 46       | 0       |                        | ) C     | 117        | 5.00   |
| 105 45 0                                | 45 0 161                                | 0 161           | 161   |       | 82            |        | 4          | 17        | 0  | 47         | 63      | 111     | -                  | 0       | 175        | 29       |         | 49                     | 0       | 109        | 492  |
| 36 450 198 0 684 113                    | 198 0 684                               | 0 684           | 684   |       | 113           |        | 5          | 81        | 0  | 207        | 254     | 477     | æ                  | 0       | 739        | 203      | 2       | 255                    | 0       | 460        | 2090   |
| 1264                                    | 332 0 1264                              | 0 1264          | 1264  |       | 241           |        | 24         | 150       | 0  | 415        | 493     | 871     | 12                 | c       | 1376       | 372      | c       | 537                    | c       | 011        | 3000   |
| 67.8 26.3 0                             | 26.3 0                                  | 0               |   |       | 58.1          |        | 5.8        | 36.1      | 0  |            | 35.8    | 63.3    | 6.0                | 0       | 5          | 40.8     | 0       | 28.9                   | o c     | 5          | 2000   |
| 21.6 8.4 0 31.9                         | 8.4 0 31.9                              | 0 31.9          | 31.9  |       | 6.1           |        | 9.0        | 3.8       | 0  | 10.5       | 12.4    | 23      | 0.3                | 0       | 34.7       | 4.6      | 0.1     | 13.5                   | o C     | 88         |  |
|   |   |                 |   |       |               |        |            |           |  |            |         |         |                    |         |            |          |         |                        |         |            | A STATE OF THE PERSON NAMED IN COLUMN 2 ASSESSMENT OF THE PERSON NAM |
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| 12 7                                    | 7 0                                     |                 |   | 19    | -             | i      | 0          | 4         | C  | ı.         | α       |         | 2                  | ,       | 2.0        | 5.0      | 3       | t 0                    | > 0     | 33.6       | 40.4   |
| 2.1                                     | 21 0 15                                 | ٠<br>٦          | τ.  |       | 0.4           |        | · c        |           | o c  | ) C        | 7       | - (     | ه د                | > 0     | D :        | ٠<br>• د | >       | י                      | >       | ٥          | 4<br>9   |
| 0 + 4                                   |   | 2.0             | 5 0   | 1     | r c           |        | יי         | ۲.۱       | 5  | 71 0       | ٥.      |         | 0                  | 5       | 4.1        | 0.8      | 0       | 9.0                    | 0       | 0.7        | 1.2  |
|   | 0 0                                     | 010             | ٥١  | ***** | <b>&gt;</b> ( |        | <b>-</b> . | <b></b>   | 0  | C)         | 0       | ည       | 0                  | 0       | ς.         | -        | 0       | 0                      | 0       | -          | 14   |
| 0.3 0.3                                 | 0.3                                     | 0               |   | 0.5   | 0             |        | 4.2        | 0.7       | 0  | 0.5        | 0       | 9.0     | 0                  | 0       | 0.4        | 0.3      | 0       | 0                      | 0       | 0.1        | 0.4  |

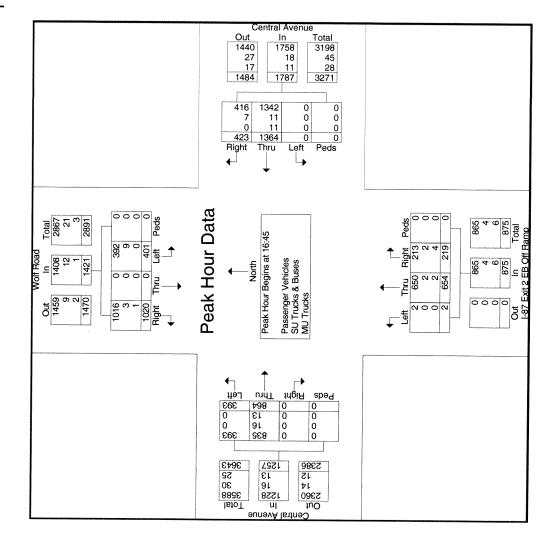


Clough, Harbour & Associates LLP Manual Turning Movement Count

III Winners Circle, P.O. Box 5269 Albany, NY 12205 www.cloughharbour.com

File Name: Wolf - Central PM Site Code : 62906010

Start Date: 6/29/2006 Page No: 4



Exit 3 Ariport Connector Wolf Rd & Central Ave 4 to 6



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Exit 3 Ariport Connector Wolf Rd & Central Ave PM

4 to 6

File Name: Wolf - Central PM Site Code: 62906010 Start Date: 6/29/2006 Page No: 3

|  |            |           | Wolf Road  | ad                         |  | The state of the s | Sen  | tral Avenue | nue    |            |      | 87 Exit | -87 Exit 2 EB Off Ramp | Ramp   |                 |      | Cent | Pentral Avenue | 9    |           |           |
|--|------------|-----------|------------|----------------------------|--|--|------|-------------|--------|------------|------|---------|------------------------|--------|-----------------|------|------|----------------|------|-----------|-----------|
| The second secon |            | Ϊ́        | Southbound | pur                        |  |  | >    | estbound    | ō      |            | •    | Š       | Northbound             | P      |                 |      | E.   | Eastbound      | } _  |           |           |
| Start Time   | Left       |           | Right      | Thru Right Peds App. Total | App. Total   | Left   | Thr  | Right       | Peds / | App. Total | Left | Thru    | Right                  | Peds A | Peds App. Total | Left | Thru | Right          | Peds | Ann Total | Int Total |
| Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of   | is From 1  | 6:00 to   | 17:45 - P  | eak 1 of                   | -  |  |      |             | -      |            |      | -       | •                      |        |                 |      |      | ,              | _    |           |           |
| Peak Hour for Entire Intersection Begins at 16:45  | ire Inters | ection Be | eqins at   | 16:45                      |  |  |      |             |        |            |      |         |                        |        |                 |      |      |                |      |           |           |
| 16:45  | 108        | 0         | 247        | 0                          | 355  | 0  | 342  | 107         | 0      | 449        | O    | 163     | 59                     |        | -               | 104  | 223  |                |      | 207       |           |
| 17:00  | 85         | 0         | 263        | 0                          | 355  | 0  | 354  | 6           | 0      | 445        | ~ ~  | 160     | 45                     | 0      | 216             | 96   | 25   | C              | c    | 308       | 1324      |
| 17:15  | 114        | 0         | 300        | 0                          | 414  | 0  | 332  | 108         | 0      | 440        | 0    | 160     | 23                     | 0      | 213             | 8 6  | 510  | ) C            | o C  | 310       | 1377      |
| 17:30  | 87         | 0         | 210        | 0                          | 297  | 0  | 336  | 117         | 0      | 453        | 0    | 17      | 23                     | c      | 224             | 5    | 210  | · c            | · C  | 3.5       | 1286      |
| Total Volume   | 401        | 0         | 1020       | 0                          | 1421   | 0  | 1364 | 423         | 0      | 1787       | 2    | 654     | 219                    | 0      | 875             | 393  | 864  | 0              | , c  | 1257      | 5340      |
| % App. Total   | 28.2       | 0         | 71.8       | 0                          | Phylin Phone and Phylin Phyllin Phylin Phylin Phylin Phyllin Phyllin Phylin Phylin Phy | 0  | 76.3 | 23.7        | 0      |            | 0.2  | 74.7    | 52                     | 0      |                 | 31.3 | 68.7 | 0              | · C  |           | )         |
| 품  | .879       | 000.      | .850       | 000.                       | .858   | 000  | .963 | 904         | 000    | .986       | .250 | .956    | 928                    | 000    | 776             | 945  | 696  | 000            | , 00 | 961       | 969       |
| Passenger Vehicles   | 392        | 0         | 1016       | 0                          | 1408   | 0  | 1342 | 416         | 0      | 1758       | 2    | 650     | 213                    | 0      | 865             | 393  | 835  | 0              | C    | 1228      | 5259      |
| % Passenger Vehicles   | 97.8       | 0         | 93.6       | 0                          | 99.1   | 0  | 98.4 | 98.3        | 0      | 98.4       | 100  | 99.4    | 97.3                   | 0      | 6.86            | 100  | 96.6 | 0              | · C  | 2 2 2     | 98.5      |
| SU Trucks & Buses  | တ          | 0         | က          | 0                          | 12   | 0  | =    | 7           | 0      | 18         | 0    | 8       | Ø                      | 0      | 4               | 0    | 16   | 0              | 0    | 16        | 50        |
| % SU Trucks & Buses  | 2.5        | 0         | 0.3        | 0                          | 0.8  | 0  | 0.8  | 1.7         | 0      | 1.0        | 0    | 0.3     | 6.0                    | 0      | 0.5             | 0    | 6.   | 0              | 0    | 6.        | 6.0       |
| MU Trucks  | 0          | 0         | <b></b> -  | 0                          | ***  | 0  | Ξ    | 0           | 0      | Ξ          | 0    | 7       | 4                      | 0      | 9               | 0    | 13   | 0              | 0    | 13        | 3.5       |
| % MU Trucks  | 0          | 0         | 0.1        | 0                          | 0.1  | 0  | 0.8  | 0           | 0      | 9.0        | 0    | 0.3     | 1.8                    | 0      | 0.7             | 0    | 1.5  | 0              | 0    | 0.0       | 9.0       |



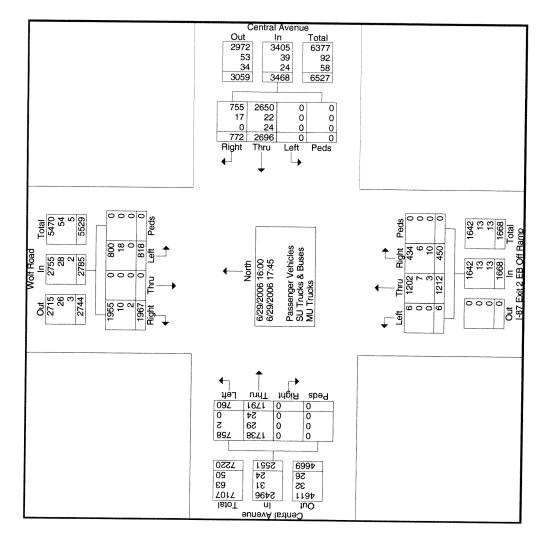
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File Name: Wolf - Central PM Site Code : 62906010

: 6/29/2006 : 2 Start Date : Page No :



Exit 3 Ariport Connector Wolf Rd & Central Ave 4 to 6



Exit 3 Ariport Connector Wolf Rd & Central Ave PM

4 to 6

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Albany, NY 12205
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File Name: Wolf - Central PM Site Code: 62906010 Start Date: 6/29/2006 Page No: 1

|  |          | >        | Wolf Road   | aq  |                 | Central Avenue I-87 Exit 2 EB Off Ramp | Ceri     | ntral Avenue | nue      |            |                | I-87 Exit 2 EB Off Ramp | 2 EB O     | ff Ramp     |            |       | S              | Central Avenue | Jue  | nonna compression de la compression della compre |           |
|--|----------|----------|-------------|-----|-----------------|--|----------|--------------|----------|------------|----------------|-------------------------|------------|-------------|------------|-------|----------------|----------------|------|--|-----------|
| Andrew may be described to the control of the contr |          | ŏ        | Southbound  | pur |                 |  | ≥        | estbound     | 9        |            |                | S                       | Northbound | ַב          |            |       | Щ              | Eastbound      | 70   |  |           |
| Start Time   | Left     | Thru     | Right       |     | Peds App. Total | Left                                   | Thru     | Right        | Peds Ap  | App. Total | Left           | Thru                    | Right      | Peds /      | App. Total | Left  | Thru           | Right          | Peds | Ann Total  | Int Total |
| Factor   |          | 1.0      | 1.0         | 1.0 |                 | 1.0                                    | 1.0      | 1.0          | 1.0      |            | 1.0            | 1.0                     | 1.0        |             |            | 0     | 10             | , -            |      |  |           |
| 16:00  |          | 0        | 217         | 0   | 328             | 0                                      | 354      | 83           | 0        | 437        | -              | 130                     | 49         | c           | 180        | 3     | σ.ς            |                | 9.0  | 308  | +069      |
| 16:15  |          | 0        | 280         | 0   | 397             | 0                                      | 349      | 8            | 0        | 430        |                | 127                     | 2 5        | o c         | 2 2        | 8 8   | 070            | o c            | 0 0  | 000  | 1000      |
| 16:30  |          | 0        | 240         | 0   | 335             | 0                                      | 339      | 9            | 0        | 430        | ٠ م            | 5.5                     | 23.5       | o c         | 2 5        | 8 8   | 202<br>205     | o c            | 0 0  | 2400   | 7.00      |
| 16:45  | 5<br>80  | 0        | 247         | 0   | 355             | 0                                      | 342      | 107          | 0        | 449        | 0              | 163                     | 20         | 0 0         | 200        | 2 5   | 223            | o c            | o c  | 207  | 1253      |
| Total  |          | 0        | 984         | 0   | 1415            | 0                                      | 1384     | 362          | 0        | 1746       | 4              | 570                     | 217        | 0           | 791        | 372   | 936            | 0              | 0    | 1308   | 5260      |
| 17:00  | 95       | 0        | 263         | 0   | 355             | 0                                      | 354      | 91           | 0        | 445        | 8              | 160                     | 54         | c           | 216        | 8     | 210            | c              | c    | 308  | 1304      |
| 17:15  |          | 0        | 300         | 0   | 414             | 0                                      | 332      | 108          | 0        | 440        | 0              | 160                     | 23         | ) C         | 2 5        | 8 5   | 210            | o c            | 0 0  | 250  | 1277      |
| 17:30  |          | 0        | 210         | 0   | 297             | 0                                      | 336      | 117          | 0        | 453        | 0              | 171                     | 23         | 0           | 224        | 100   | 210            | o C            | 0 0  | 25.0   | 1086      |
| 17:45  |          | 0        | 210         | 0   | 304             | 0                                      | 290      | 95           | 0        | 384        | 0              | 151                     | 73         | O           | 224        | 0     | 214            | ) C            | · c  | 2 6  | 1004      |
| lotal  | 387      | 0        | 983         | 0   | 1370            | 0                                      | 1312     | 410          | 0        | 1722       | 2              | 642                     | 233        | 0           | 877        | 388   | 855            | 0              | 0    | 1243   | 5212      |
| Grand Total  | 818      | 0        | 1967        | C   | 2785            | c                                      | 9696     | 077          | c        | 2460       | q              | 0                       |            | Ċ           | 000        | Î     | į              |                |      |  | !         |
| Apprch %   | 29.4     | 0        | 70.6        | 0   | i               | · c                                    | 77.7     | 1 00         | > <      | 2          | 2 6            | 2121                    | 5 6        | > 0         | 200        | 2 6   | 1.9            | <b>o</b> (     | 0    | 2551   | 10472     |
| Total %  | 7.8      | 0        | 18.8        | 0   | 26.6            | 0                                      | 25.7     | 7 4          | o c      | 33.1       | † <del>-</del> | 7 4                     | 7 2        | > 0         | 1          | 7 7 7 | 70.7           | <b>)</b>       | 0 (  |  |           |
| Passenger Vehicles   |          |          |             |     |                 |  |          |              |          | 3          | 5              | 2                       | 2.         |             | B.C.       | 5.7   | 1/1            | >              | >    | 24.4   |           |
| % Passenger Vehicles   | 97.8     | 0        | 99.4        | 0   | 98.9            | 0                                      | 98.3     | 87.8         | O        | 98.2       | 100            | 0 00                    | 96 4       | c           | 7 80       | 7 00  | 0              | c              | c    | 1  | ć         |
| SU Trucks & Buses  | 18       | 0        | 10          | 0   | 28              | c                                      | 2        | 17           |          | 30         | 2              | 1.00                    | 2          |             | 1.00       | 99.7  | 160            | > 0            | > 6  | 3/.0   | 98.3      |
| % SH Trucks & Buses  | 000      | <b>C</b> | C           | · C | ì               | · c                                    | 10       | - 0          | 0 0      | 3;         | <b>o</b> (     | - 0                     | 0 (        | <b>&gt;</b> | 2          | N     | ŝ              | 0              | 0    | 33   | -         |
| MI Trucke  | 1        | 0        | 3 0         |     | - 0             |  | 0.0      | 7.7          | 0        | 1.1        | 0              | 9.0                     | 7.3        | 0           | 0.8        | 0.3   | 1.6            | 0              | 0    | 1.2  | +:        |
| % MII Trucke   | o c      | > <      | 4 6         | > 0 | V 7             | <b>&gt;</b> (                          | 7 6      | <b>)</b>     | <b>-</b> | 24         | 0              | က                       | 9          | 0           | <u>t</u>   | 0     | 24             | 0              | 0    | 24   | 63        |
| SACRET ON C  | <b>.</b> | >        | -<br>-<br>- | >   |                 | >                                      | 9.<br>9. | 0            | 0        | 0.7        | 0              | 0.2                     | 2.2        | 0           | 0.8        | 0     | <del>د</del> . | 0              | 0    | 0.9  | 9.0       |



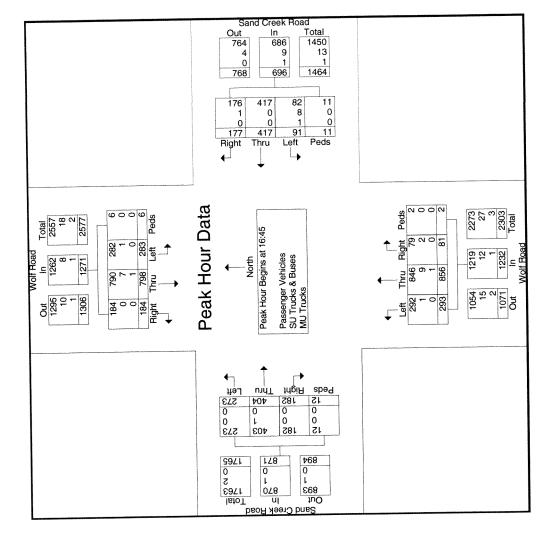
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File Name: Wolf - Sand Creek PM Site Code: 62806006

: 6/28/2006 : 4 Start Date

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Exit 3 Airport Connector Wolf Rd & Sand Creek Rd 4 to 6



Wolf Rd & Sand Creek Rd PM

4 to 6

Exit 3 Airport Connector

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III Winners Circle, P.O. Box 5269

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File Name: Wolf - Sand Creek PM : 62806006 Site Code

: 6/28/2006 : 3 Start Date

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|  | Management of the section of the sec | 7.6       | 2 71 - 71  | 7        |                 |            | Cond | Cand Creek Road | Soad             |            |      | *              | Wolf Road  |               | •          |               | Sand   | Sand Creek Road | oad        |           |                   |
|--|--|-----------|------------|----------|-----------------|------------|------|-----------------|------------------|------------|------|----------------|------------|---------------|------------|---------------|--------|-----------------|------------|-----------|-------------------|
|  |  | - (       | Wolf Hoad  | 2        |                 |            | 2 ×  | Westbound       | }<br>}<br>}<br>} |            |      | S              | Northbound | 0             |            |               | Eas    | Eastbound       |            |           | Annual Confidence |
|  |  | ัก        | Southbound | חם       |                 |            | *    | 20000           |                  |            | -    |                |            |               |            | 4. 1          | H      | thoia           | Dade       | Ann Total | ţ                 |
| Start Time   | Left   |           | Thru Right | Peds     | Peds App. Total | Left       | Thru | Right           | Peds A           | App. Total | Left | Thru           | Right      | Peds /        | App. Total | Len           |        | nigir.          | armal .    | -         |                   |
| Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of | sis From   | 16:00 to  | 17:45 - P  | eak 1 of | _               |            |      |                 |                  |            |      |                |            |               |            |               |        |                 |            |           |                   |
| Dook Hour for Entire Intersection Begins at 16:45  | utire Inters   | ection Be | agins at   | 16:45    |                 |            |      |                 |                  |            |      |                |            | (             | ****       |               |        |                 |            |           |                   |
| 16.45  | 8  | 195       | 44         | 0        | 307             | 22         | 8    | 45              | <del></del>      | 160        | 99   | 194            | 22         | ~             |            | í             | 5      | *               | *          | 211       |                   |
| £  |  | 0 0       |            | •        | 000             | S. A.      | g    | 44              | ĸ                | 167        | 73   | 201            | 17         | 0             | 291        | 2             | 20     | 4               | +          | 7         |                   |
| 17:00  | /9   | SON<br>N  | δţ         | 4        | 320             | 3 :        | 3 5  | į               | • (              | 1          | F    | 951            | 96         | C             | 354        | 9             | 92     | 19              | 4          | 218       | •                 |
| 17:15  | 77   | 212       | 28         | CI       | 349             | 38         | 202  | 45              | ກ                | 701        | :    | - 6            | 9 (        | 0 0           | 6          | 7             | 13/    | 23              | ď          | 237       | •                 |
| 17.30  | 7.7  | 182       | 34         | 0        | 287             | 56         | 130  | 54              | N                | 212        | ري   | 012            | ٥          | 0             | 100        | 010           | 5      | 200             | Ç          | 87.4      | ,                 |
| omido// lotoT                                      | 283  | 708       | 184        | 9        | 1271            | 91         | 417  | 177             | -                | 969        | 293  | 826            | <u>∞</u>   | C)            | 1232       | 5/3           | 404    | 70.0            | ų ,        | 5         |                   |
| lotal volune                                       |  | 2 6       | 5 .        | ) u      |                 |            | 50 0 | 25.4            | 4                |            | 23.8 | 69.5           | 9.9        | 0.5           |            | 31.3          | 46.4   | 20.9            | 4.         | -         |                   |
| % App. Total                                       |  | 97.8      | 0.4.0      | 0.0      |                 |            | 0.00 | 1.03            | 2                | 100        | ĺ    | 853            | 779        | 250           | 870        | 935           | .754   | .746            | .750       | 919       |                   |
| 岩  |  | 941       | .793       | 375      | .910            | .875       | .802 | 918.            | Occ.             | 170.       |      | 550            | 2 6        | 3             | 0,00       | 073           | 403    | 182             | 42         | 870       |                   |
| Passenger Vehicles                                 | _  | 790       | 184        | 9        | 1262            | 88         | 417  | 176             | =                | 989        |      | 840<br>0 40    | ָ<br>ק     | <b>V</b> 5    | 200        | 2 2           | 200    | 5               | 9          | 6.66      |                   |
| %. Dassenger Vehicles                              | 9.66   | 99.0      | 100        | 100      | 99.3            | 90.1       | 100  | 99.4            | 9                | 98.6       |      | 98.8           | 67.5       | 3 °           | 0.0        | 3 0           | 0.00   | 3 <             | 2          | ,         |                   |
| C11 Trucks & Buses                                 |  | 7         | 0          | 0        | 80              | ∞          | 0    | -               | 0                | <b>o</b>   |      | <b>o</b>       | N          | <b>&gt;</b> ( | 7          | > 0           | - c    | 0 0             | o c        | · •       |                   |
| SO HUCKS & Duses                                   | 0.4  | 6.0       | 0          | 0        | 9.0             | 8.8        | 0    | 9.0             | 0                | 6.         |      | -              | 2.5        | 0 (           | ).<br>-    | <b>&gt;</b> C | ,<br>, | o c             | <b>o</b> c | - c       |                   |
| MU Trucks  | 0  | -         | 0          | 0        | -               | -          | 0    | 0               | 0                | , ,        | 0 0  | <del>-</del> , | 0 0        | <b>o</b> c    |            | o c           | o c    | o c             | 0 0        | 0         |                   |
| % MU Trucks  | 0  | 0.1       | 0          | 0        | 0.1             | <u>-</u> : | 0    | 0               | 0                | 0.7        |      |                | >          | >             | -          | >             | >      | •               | >          | •         |                   |

.944 4037 99.2 30 0.7 0.7

% SU Trucks & Buses MU Trucks % MU Trucks

997 1078 1037 4070

Total



Exit 3 Airport Connector Wolf Rd & Sand Creek Rd

4 to 6

Clough, Harbour & Associates LLP Manual Turning Movement Count

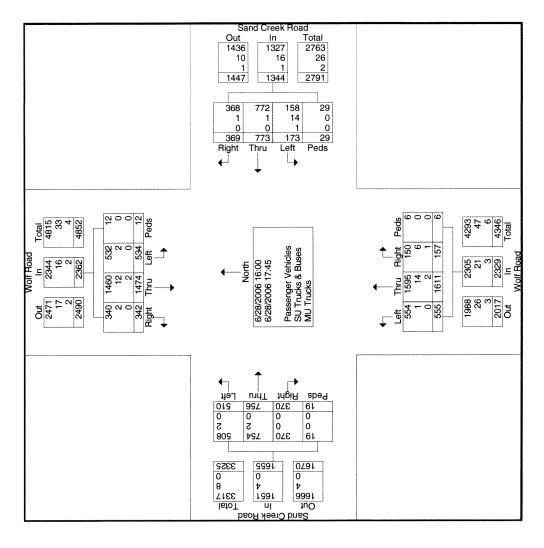
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File Name: Wolf - Sand Creek PM Site Code: 62806006

: 6/28/2006 : 2 Start Date

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Exit 3 Airport Connector Wolf Rd & Sand Creek Rd PM

4 to 6

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File Name: Wolf - Sand Creek PM Site Code: 62806006 Start Date: 6/28/2006 Page No: 1

|                         |            | THE RESIDENCE AND ADDRESS OF THE PERSONS ASSESSED. | Int. Total | 110  | - 10  | 8/1            | 890      | 928   | 3630 | 0     | /66        | 10/8  | 1037       | 948   | 4060    |             | 7690     |           |  | G G                  | 99.2              | 22                   | 0.7       | ď   | o .         |
|-------------------------|------------|--|------------|------|-------|----------------|----------|-------|------|-------|------------|-------|------------|-------|---------|-------------|----------|-----------|--|----------------------|-------------------|----------------------|-----------|-----|-------------|
|                         |            |  | App. Total | 170  | 0 0   | 55             | 185      | 205   | 759  | Š     | - 070      | 218   | 237        | 230   | 968     |             | 1655     |           | 21.5   | 0                    | 23.0              | 4                    | 0.2       | -   | 0 (         |
| Road                    | -          |  | Peds ⊅     | 4    | 1 (   | N ·            |          | -     | 9    | •     | <b>†</b> • | 4     | က          | N     | 13      | ,           | 20 7     | Ξ         | 0.2  | 9                    | 3                 | 0                    | 0         | _   | > 0         |
| Sand Creek Road         | Easthound  | 50000  | Right      | 3.1  | - 9   | <del>2</del> . | 54       | 47    | 180  | 7     | 7 (        | ō     | 33         | 55    | 190     | 0           | 0/5      | 4.77      | 4.8  | •                    | 3                 | 0                    | 0         | c   | 0           |
| San                     | u          |  | Thru       | 111  | . 0   | 0 1            | 5)       | გე    | 322  | 8     | 8 6        | 36    | 134        | 115   | 434     | ļ           | 1 2      | 45.7      | 9.8  | 7                    | 99.7              | N                    | 0.3       | c   | 0 0         |
|                         |            |  | Left       | 9    | 9 9   | 8 2            | ر<br>د ا | 7.5   | 251  | 5,    | 2 4        | 0     | 67         | 28    | 259     | Š           | 2 6      | χ<br>Σ.α  | 0.0  | 900                  | 33.0              | N                    | 0.4       | c   | , (         |
| S.                      |            |  | App. Total | 304  | 262   | 202            | 1/2      | 987   | 1124 | 204   | 200        | 400   | 301        | 259   | 1205    |             | 6707     | 0         | 30.3   | g                    | 000               | N                    | 6.0       | er. | (           |
| 2 2                     | pu         |  | Heds       | -    | •     | - c            | > 0      | 7     | 4    | c     | o c        | > 0   | 0          | 2     | 2       | ď           | 2        | 9 6       | -<br>-   | 100                  | 3                 | >                    | 0         | 0   | , ,         |
| Wolf Road               | Northbound | ä  | Hight      | 16   | ō     | 2 5            | 7 6      | 7     | 78   | 17    | : %        | 2 4   | 9          | ଯ     | 79      | 157         | 2 4      | ; c       | 7  | 95.5                 | 5 6               | 0                    | 3.8       | •   | 9           |
| 2 2 2 2 2               | Z          | F  | חשם        | 227  | 177   | 140            | 2 5      | 5     | 111  |       | 25.5       |       |            |       |         | 184         | 609      | 9 6       | 80.3   | ō                    | 3 7               | <u> </u>             | 0.9       | N   | 0           |
|                         |            | 40   | Геп        | 09   | 99    | 7 8            | - 0      | 0 0   | 265  | 73    | 77         |       | 0 !        | 65    | 230     | אלע         | 3 c      | 1 (50     | 7.1  | 8 66                 |                   | (                    | 0.2       | 0   | C           |
| nd Creek Road Wolf Road |            | A A  | Арр. готаг | 141  | 157   | 154            | 1 6      | 3 2   | 612  | 167   | 157        |       | 717        | 196   | 732     | 1344        | :<br>)   | 17 E      | 3,   | 7 86                 | 9                 | 2 (                  | 1.2       | _   | -           |
| Road                    | 멸          | Dodo   | รูกอน      | 7    | e     | י וכ           | · •      | - 9   | 9    | 7.    | er.        | 0 0   | <b>V</b> 0 | 0     | 13      | δ           | 0        | 1 0       | 5  | 100                  | c                 | 0 0                  | 0         | 0   | C           |
| nd Creek Road           | Westbound  | ţ  | 11611      | 40   | 20    | 44             | 45       | 2 5   | 8    | 44    | 34         | 7     | † (        | 20    | 190     | 369         | 27.5     | 4         | 2  | 99.7                 | -                 | - (                  | ٥.٠       | 0   | C           |
| San                     | >          | The  | 2          | 65   | 83    | 8              | 8 8      | 1000  | 878  | 8     | 102        | 130   | 2 7        | 8 :   | 444     | 773         | 57.5     | 101       |  | 666                  | -                 |                      | - ·       | 0   | 0           |
|                         |            | #a   |            |      |       |                | 2 %      |       |      | 25    | 2          | 26    | 2 4        | 0 5   | &<br>20 | 173         | 12.9     | 20        |  | 91.3                 | 14                | 0                    | o ·       | -   | 9.0         |
|                         |            | Ann Total  | י משלי     | 296  | 252   | 280            | 307      | 1135  | 200  | 328   | 349        | 287   | 282        | 202   | /77     | 2362        |          | 30.7      |  | 99.2                 | 16                | 1                    | 5         | N   | 0.1         |
| þ                       | 밀          | Peds   |            | -    | -     | က              | 0        | ĸ     | י    | 4     | 7          | С     | , 4-       | - 1   | •       | 12          | 0.5      | 0.2       | -  | 100                  | 0                 | c                    |           | >   | 0           |
| Wolf Road               | Southbound | Right  |            | 33   | 43    | 4              | 44       | 166   | 3    | 48    | 28         | 34    | 98         | 92.4  | 0       | 342         | 14.5     | 4.4       |  | 99.4                 | 2                 | 90                   | 9         | >   | 0           |
|                         | ű          | Thru   | 1          | 66   | 152   | 170            | 195      | 712   | ī    | 209   | 212        | 182   | 159        | 76.7  | 70/     | 1474        | 62.4     | 19.2      | AND THE PERSON NAMED IN COLUMN | 99.1                 | 12                | α C                  | 5         | 4   | 0.1         |
|                         |            | Left   | 10         | - 0  | 26    | 29             | 89       | 252   |      | 29    | 77         | 71    | 67         | 080   | 202     | 534         | 22.6     | 6.9       |  | 9.66                 | 7                 | 0.4                  |           | ) ( | <b></b>     |
|                         | 190A 00A   | Start Time   | 48.00      | 0.00 | 16:15 | 16:30          | 16:45    | Total |      | 17:00 | 17:15      | 17:30 | 17:45      | LetoT | 3       | Grand Total | Apprch % | % Lotal % | Passenger Vehicles   | % Passenger Vehicles | SU Trucks & Buses | % SIL Trucks & Buses | MI Trucke |     | % MU Irucks |



Exit 3 Airport Connector Wolf Rd & Metro Park Rd

4 to 6

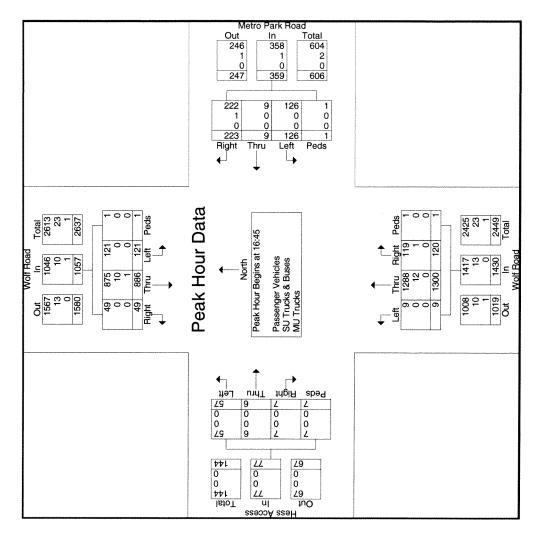
Manual Turning Movement Count Clough, Harbour & Associates LLP

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File Name: Wolf - Metro Park PM Site Code: 62806004

Start Date: 6/28/2006

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Exit 3 Airport Connector Wolf Rd & Metro Park Rd

4 to 6

Manual Turning Movement Count

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File Name: Wolf - Metro Park PM Site Code: 62806004

: 6/28/2006 : 3 Start Date: Page No:

|  |              | _ (       | Wolf Road  | ָּקַ     |            | ~~~  | Met  | Aetro Park Roa | Road |                 |      | 3    | Wolf Road  | -      |                            |      | ¥                                       | less Access | SS   |                           |   |
|--|--------------|-----------|------------|----------|------------|------|------|----------------|------|-----------------|------|------|------------|--------|----------------------------|------|---|-------------|------|---------------------------|---|
|  |              | ֿֿֿֿֿ     | southbound | 2        |            |      | -    | Vestbound      | 힏    |                 |      | ž    | lorthbound | g      |                            |      | ũ                                       | astbound    | 70   |                           |   |
| Start Time Left Thru Right Peds App. Total           | Left         | Thru      | Right      | Peds     | App. Total | Left | Thru | Right          | Peds | Peds App. Total | Left | Thru | Right      | Peds , | Thru Right Peds App. Total | Left | Thru                                    | Right       | Peds | Thru Right Peds App Total | = |
| Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1 | rsis From 1  | 6:00 to   | 17:45 - Pe | 3ak 1 of | -          |      |      |                |      |                 |      |      | )          |        |                            |      | *************************************** | 0           |      | deb.                      |   |
| Peak Hour for Entire Intersection Benins at 16:45    | tire Interse | ection Be | edins at 1 | 6.45     |            |      |      |                |      |                 |      |      |            |        |                            |      |   |             |      |                           |   |

|             |            | Int. Total                 |  |   |   | 703   | 20 K  | 2007          | 6000         | 6262           |        | 325.   | 2898               | 99 1                 | 24                | ά                   |           | -                           | 0.0        |
|-------------|------------|----------------------------|--|---|---|-------|-------|---------------|--------------|----------------|--------|--------|--------------------|----------------------|-------------------|---------------------|-----------|-----------------------------|------------|
|             | Eastbound  | App. Total In              |  |   | serve                                   | 7     | . c   | 3 8           | 27           | •              | Chr    | 2      | 11                 | 50                   | 2                 | ) C                 | >         | 0                           | 0          |
| SS -        |            | Peds An                    |  |   |   | c     | ·     | > ₹           | 7            | · •            | - 0.70 | Des.   | 7                  | 100                  | ) C               | ) C                 | )         | 0                           | 0          |
| less Access |            | Right                      |  |   |   | 0     | 1 0   | · "           | , r          | 0              | - 0.   | 200.   | 7                  | 100                  |                   | · C                 | ٠ (       | 0                           | 0          |
| ₽'          |            | Thru                       | National Control of the Control of t |   |   | 0     | 1 67  | <b>&gt;</b> C | <b>2</b>     | α<br>1         | 0.7    | OSC.   | 9                  | 100                  | C                 | · C                 | ) (       | 0                           | 0          |
|             |            | Left                       |  |   |   | -     | 1     | <u> </u>      | 2 12         | 5 7            | 1 000  | 000    | 22                 | 100                  | C                 | · C                 | •         | 0                           | 0          |
|             | Northbound | Peds App. Total            |  |   |   | 409   | 361   | 337           | 1430         | 2              | 720    | 4/0.   | 1417               | 99.1                 | 13                | 0                   | 9         | 0                           | 0          |
| <b>2</b> }  |            | Peds                       |  |   |   | -     | · c   | · C           | )<br>        | - <del>-</del> | 250    | 50.    |                    | 100                  | 0                 | C                   | •         | >                           | 0          |
| WOII HOAD   |            | Right                      |  |   |   | 35    | 75    | . E.          | 120          | 2 0            | 600    | 200.   | 119                | 99.2                 | •                 | 0.8                 | ;         | >                           | 0          |
|             |            | Thru                       |  |   |   | 372   | 325   | 305           | 1300         | 000            | 27.00  | †<br>5 | 1288               | 99.1                 | 12                | 6.0                 |           | >                           | 0          |
|             |            | Left                       |  |   | *************************************** | 4     | 2     | -             |              | 9 0            |        |        |                    |                      |                   |                     |           |                             |            |
|             | Westbound  | App. Total                 | ***************************************  |   |   | 105   | 6     | 6             | 359          |                | REE    | 3      | 358                | 99.7                 | -                 | 0.3                 |           | >                           | 0          |
| מממ         |            | Peds                       |  |   | -                                       | 0     | 0     | C             | -            | 03             | 250    | 3      | -                  | 9                    | 0                 | 0                   |           | >                           | 0          |
|             |            | Right                      |  |   | 29                                      | 69    | 51    | 4             | 223          | 62.1           | a a a  | 9      | 222                | 9.66                 | •                 | 0.4                 | c         | >                           | 0          |
|             |            | Thru                       |  |   | <del></del>                             | *     | 4     | က             | 0.           | 2.5            | 563    | 9      | ဢ                  | 100                  | 0                 | 0                   | c         | >                           | 0          |
|             |            | Left                       |  |   | 34                                      | 35    | 35    | 55            | 126          | 35.1           | 000    |        | 126                | 9                    | 0                 | 0                   | <b>C</b>  | >                           | 0          |
|             |            | Thru Right Peds App. Total | -  |   | 258                                     | 264   | 252   | 283           | 1057         |                | 934    |        | 1046               | 99.0                 | 10                | 0.9                 | •         | -                           | 0.1        |
| 2 5         |            | Peds                       | eak 1 of   | 16:45   | 0                                       | 0     | _     | 0             | -            | 0.1            | 250    | ,      | -                  | 9                    | 0                 | 0                   | c         | ٠ د                         | 0          |
| outhbourg   |            | Right                      | 17:45 - P  | egins at  | ,<br>5                                  | 9     | 14    | 12            | 49           | 4.6            | .875   | 9      | 94                 | 9                    | 0                 | 0                   | c         | ۰ د                         | 0          |
| Ű.          |            |                            | 16:00 to   | section B   | 220                                     | 223   | 212   | 231           | 886          |                | -      | -      | 0/0                | 98.8                 | 9                 |                     | •         |                             |            |
|             |            | Left                       | sis From   | ntire Intera                                      | 25                                      | 31    |       | 4             | 121          | 11.4           | .756   | +0+    | <u> </u>           | 8                    | 0                 | 0                   | _         |                             | <b>O</b>   |
|             | i          | Start Ime                  | Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1   | Peak Hour for Entire Intersection Begins at 16:45 | 16:45                                   | 17:00 | 17:15 | 17:30         | Total Volume | % App. Total   | Ħ      |        | Passenger Vehicles | % Passenger Vehicles | SU Trucks & Buses | % SU Trucks & Buses | MI Trucks | ) · · · · · · · · · · · · · | % MU TUCKS |



Wolf Rd & Metro Park Rd Exit 3 Airport Connector

4 to 6

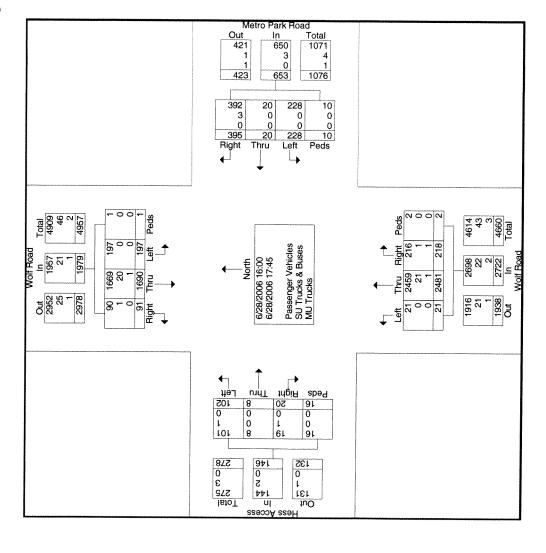
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File Name: Wolf - Metro Park PM

: 6/28/2006 : 2 Site Code : 62806004 Start Date

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Wolf Rd & Metro Park Rd Exit 3 Airport Connector

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File Name: Wolf - Metro Park PM Site Code: 62806004

Start Date : 6/28/2006 Page No : 1

| Start Time  |                      |      | -    | Wolf Road | ğ            | *************************************** |      | Metro | ro Park Road | oad |           |      | ≥    | Wolf Road                               | 70  |            |      | Ŧ    | Hess Access | SS   |            |             |
|---|----------------------|------|------|-----------|--------------|---|------|-------|--------------|-----|-----------|------|------|---|-----|------------|------|------|-------------|------|------------|-------------|
| Thin   Right   Peds   App. Total   Left   Thin   Right   Peds   App. Total   Int.   Int.   Right   Peds   App. Total   Int.   |                      |      | ű    | outhbou   | 힏            |   |      | Š     | estboun      | 75  |           |      | 2    | rthboun                                 | Þ   |            |      | ñ    | stboun      | ō    |            |             |
| 1.0   1.0 | Start Time           | Left | Thru | Right     | Peds         | App. Total                              | Left | Thru  | Right        |     | op. Total | Left | Thru | Right                                   |     | App. Total | Left | Thru | Right       | Peds | App. Total | Int. Total  |
| 15         183         10         0         218         35         6         47         2         90         5         277         19         0         301         9         1         4         2         16           25         220         23         13         2         326         2         326         16         0         4         2         16           25         220         13         0         258         34         15         1         326         13         1         4         2         17           74         828         42         10         96         2         296         23         13         1         1         4         2         2         2         2         2         2         2         1 <td< td=""><td>Factor</td><td>1.0</td><td>1.0</td><td>1.0</td><td>1.0</td><td></td><td>1.0</td><td>1.0</td><td>1.0</td><td>+</td><td></td><td>1.0</td><td>1.0</td><td>1.0</td><td>+</td><td></td><td>1.0</td><td>1.0</td><td>1.0</td><td>_</td><td></td><td></td></td<>   | Factor               | 1.0  | 1.0  | 1.0       | 1.0          |   | 1.0  | 1.0   | 1.0          | +   |           | 1.0  | 1.0  | 1.0                                     | +   |            | 1.0  | 1.0  | 1.0         | _    |            |             |
| 13         218         9         0         240         13         2         31         0         46         2         305         21         1         329         16         0         4         2         22         2         386         23         0         324         1         39         2         286         23         0         328         1         6         96         1         1200         87         1         1299         48         3         13         7         71           74         828         42         0         94         11         189         5         324         11         1200         87         1         1299         48         3         13         7         71           25         212         14         1         252         35         4         51         0         90         2         325         34         0         91         1         1200         87         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1  | 16:00                | \$   | 193  | 9         | 0            | 218                                     | 35   | 9     | 47           | 2   | 8         | 5    | 277  | 19                                      | 0   | 301        | 6    | -    | 4           | 7    | 16         | 625         |
| 21         197         10         0         228         37         2         52         2         320         24         0         346         10         1         3         2         16           25         220         13         1         2         324         1         1200         87         1         1299         48         3         13         1         7         71           31         223         10         0         264         35         1         69         0         105         4         372         32         1         409         11         2         2         0         15         2         2         2         1         409         11         1200         87         1         1209         48         3         13         1         7         7         1         4         372         32         1         400         1         100         8         3         1         60         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1 <t< td=""><td>16:15</td><td>5</td><td>218</td><td>6</td><td>0</td><td>240</td><td>13</td><td>7</td><td>31</td><td>0</td><td>46</td><td>8</td><td>305</td><td>51</td><td>-</td><td>329</td><td>16</td><td>C</td><td>4</td><td>۱۸</td><td>2</td><td>637</td></t<>   | 16:15                | 5    | 218  | 6         | 0            | 240                                     | 13   | 7     | 31           | 0   | 46        | 8    | 305  | 51                                      | -   | 329        | 16   | C    | 4           | ۱۸   | 2          | 637         |
| 25         220         13         0         258         34         1         59         1         96         2         298         23         0         323         13         1         17           74         828         42         0         944         11         189         5         324         11         1200         87         1         1299         48         3         13         7         71           31         223         10         0         264         35         1         69         0         105         4         372         32         1         409         11         2         2         0         15           40         231         12         34         0         361         17         3         0         25         3         1         0         3         1         2         2         2         2         4         4         36         1         1         14         1         252         34         0         36         1         6         2         325         34         0         36         1         1         1         1         1         1   | 16:30                | 21   | 197  | 10        | 0            | 228                                     | 37   | 7     | 25           | 8   | 83        | α    | 320  | 24                                      | 0   | 346        | 2    | ·    | m           | 1 01 | 16         | 683         |
| 74         828         42         0         944         11         189         5         324         11         1200         87         1         1299         48         3         13         7         71           31         223         10         0         264         35         1         69         0         105         2         325         34         0         361         17         3         0         5         25           25         212         14         1         252         35         4         51         0         90         2         325         34         0         361         17         3         0         5         25         22         3         4         0         90         1         305         31         0         361         17         3         0         3         1         30         3         1         2         3         4         4         0         69         1         305         31         0         31         1         1423         4         5         7         9         7         9         7         7         1           10  | 16:45                | 52   | 220  | 13        | 0            | 258                                     | 34   | -     | 29           | -   | 92        | 2    | 298  | 23                                      | 0   | 323        | 13   | -    | N           | +    | 17         | 693         |
| 31         223         10         0         264         35         1         69         0         105         4         372         32         1         409         11         223         34         0         361         17         3         0         5         25         25         4         51         0         90         2         325         34         0         361         17         3         0         5         25         25         34         0         361         17         3         0         5         25         25         34         0         361         17         3         0         5         25         34         0         361         16         0         3         1         30         3         16         0         3         1         30         3         10         3         1  | Total                | 74   | 828  | 45        | 0            | 944                                     | 119  | =     | 189          | 5   | 324       | =    | 1200 | 87                                      | -   | 1299       | 48   | က    | 13          | 7    | 71         | 2638        |
| 25         212         14         1         252         35         4         51         0         90         2         325         34         0         361         17         3         0         5         25           40         231         12         0         283         22         3         44         0         69         1         305         31         0         37         16         0         3         1         20           27         196         13         0         28         17         1         42         5         65         3         279         34         0         316         10         9         206         5         329         10         131         1         1423         54         5         7         9         75         3         1         10         10         1  | 17:00                | 31   | 223  | 10        | 0            | 564                                     | 32   |       | 69           | 0   | 105       | 4    | 372  | 32                                      | -   | 409        | =    | 8    | Q           | 0    | 15         | 793         |
| 40         231         12         0         283         22         3         44         0         69         1         305         31         0         337         16         0         3         1         20           27         196         13         0         236         17         1         42         5         65         3         279         34         0         316         10         2         3         1         <  | 17:15                | 52   | 212  | 4         | -            | 252                                     | 32   | 4     | 51           | 0   | 8         | 8    | 325  | 34                                      | 0   | 361        | 17   | က    | 0           | 52   | 25         | 728         |
| 27         196         13         0         236         17         1         42         5         65         3         279         34         0         316         10         0         2         3         15           123         862         49         1         1035         109         9         206         5         329         10         1281         131         1         1423         54         5         7         9         75           197         1690         91         1         1690         91         10         653         21         2481         218         2         2722         102         8         20         10         146         13         14         14         14         14         14         14         14         14         14         14         14         14         14         14         14         14         15         14         15         14   | 17:30                | 40   | 231  | 12        | 0            | 283                                     | 55   | က     | 44           | 0   | 69        | -    | 305  | 31                                      | 0   | 337        | 16   | 0    | က           | -    | 2          | 209         |
| 197         1690         91         1         1979         228         20         395         10         1281         131         1         1423         54         5         7         9         75           197         1690         91         1         1979         228         20         395         10         663         21         2481         218         2         2722         102         8         20         16         146         16         146         17         17         17         17         17         17         18         0.1         69.9         5.5         13.7         11         11         11         18         0.1         49.5         19         0.1         0.3         2.7         1.7         0         10         10         0.4         45.1         4         0         49.5         13.7         11         0         1         0.4         45.1         4         0         49.5         1.9         0.1         0.0         0         0         0         0.0         0         0         0         0         0         0         0         0         0         0         0         0         0 <t< td=""><td>17:45</td><td>27</td><td>196</td><td><u>က</u></td><td>0</td><td>236</td><td>17</td><td>-</td><td>42</td><td>2</td><td>92</td><td>က</td><td>279</td><td>34</td><td>0</td><td>316</td><td>9</td><td>0</td><td>0</td><td>က</td><td>15</td><td>632</td></t<>   | 17:45                | 27   | 196  | <u>က</u>  | 0            | 236                                     | 17   | -     | 42           | 2   | 92        | က    | 279  | 34                                      | 0   | 316        | 9    | 0    | 0           | က    | 15         | 632         |
| 197         1690         91         1         1979         228         20         395         10         653         21         2481         218         2         2722         102         8         20         16         146         5           10         85.4         4.6         0.1         34.9         3.1         60.5         1.5         0.2         11.9         0.4         45.1         4         0         49.5         1.9         0.1         0.4         0.3         0.7         1.0         0.4         45.1         4         0         49.5         1.9         0.1         0.4         0.3         0.7         0.0         0.4         45.1         4         0         49.5         1.9         0.1         0.4         0.3         0.7         0.0         0.0         0.0         0         0.0  | Total                | 123  | 862  | 49        | -            | 1035                                    | 109  | 0     | 206          | 5   | 329       | 10   | 1281 | 131                                     | -   | 1423       | 54   | 5    | 7           | 0    | 75         | 2862        |
| 10         85.4         4.6         0.1         34.9         3.1         60.5         1.5         0.8         91.1         8         0.1         69.9         5.5         13.7         11           3.6         30.7         1.7         0         20         1.7         0         0         1.9         0.4         45.1         4         0         49.5         1.9         0.1         0.4         0.3         2.7         1.1         0.4         0.3         2.7         1.1         0.4         0.3         2.7         1.0         0.4         0.3   | Grand Total          | 197  | 1690 | 91        | <del>,</del> | 1979                                    | 228  | 8     | 395          | 01  | 653       | 21   | 2481 | 218                                     | 7   | 2722       | 102  | œ    | 20          | 16   | 146        | 5500        |
| 3.6         30.7         1.7         0         36         4.1         0.4         7.2         0.2         11.9         0.4         45.1         4         0         49.5         1.9         0.1         0.4         0.3         2.7           100         98.8         98.9         100         98.9         100         100         99.5         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100   | Apprch %             | 9    | 85.4 | 4.6       | 0.1          |   | 34.9 | 3.1   | 60.5         | 1.5 |           | 0.8  | 91.1 | æ                                       | 0.1 |            | 669  | 5.5  | 13.7        | =    | )          | )<br>)<br>) |
| 100         98.8         98.9         100         99.2         100         99.5         100         99.1         100<  | % Lotal %            | 3.6  | 30.7 | 1.7       | 0            | 36                                      | 4.   | 0.4   | 7.2          | 0.2 | 11.9      | 0.4  | 45.1 | 4                                       | 0   | 49.5       | 6    | 0.1  | 0.4         | 0.3  | 2.7        |             |
| 100         98.8         98.9         100         98.9         100         99.2         100         99.5         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         99.1         100         98.6  | Passenger Vehicles   |      |      |           |              |   |      |       |              |     |           |      |      | *************************************** |     |            |      |      |             |      |            |             |
| 0 20 1 0 21 0 0 3 0 3 0 21 1 0 22 1 0 1 2 0 0 1 2 0 0 1 1 0 0 0 1 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 1 0   | % Passenger Vehicles | 100  | 98.8 | 6.86      | 9            | 98.9                                    | 100  | 100   | 99.2         | 100 | 99.5      | 100  | 99.1 | 99.1                                    | 100 | 99.1       | 66   | 100  | 95          | 100  | 986        | 90          |
| 0 1.2 1.1 0 1.1 0 0 0.8 0 0.5 0 0.8 0.5 0 0.8 1 0 5 0 1.4 0 0 0 1.4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0   | SU Trucks & Buses    | 0    | 20   | -         | 0            | 21                                      | 0    | 0     | က            | 0   | 3         | 0    | 21   | -                                       | c   | 22         | ,    | c    | ,           | 2    | 0          | αν          |
| 0 01 0 0 01 0 0 0 0 0 0 0 0 0 0 0 0 0 0   | % SU Trucks & Buses  | 0    | 1.2  | <u>-</u>  | 0            | 1.1                                     | 0    | 0     | 0.8          | 0   | 0.5       | 0    | 0.8  | 0.5                                     | · C | ا<br>ا     |      | o C  | - LC        | o c  | 1 4        | p o         |
| 0 0.1 0 0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0   | MU Trucks            | 0    | -    | 0         | 0            | -                                       | 0    | 0     | 0            | 0   | 0         | C    |      | -                                       | U   | 0          |      | 0    | ) (         | ò    | : 0        | 9 (7        |
|   | % MU Trucks          | 0    | 0.1  | 0         | 0            | 0.1                                     | 0    | 0     | 0            | 0   | 0         | 0    | · C  | 0.5                                     | · C | 0          | o C  | o c  | ) C         | 0 0  | o C        | , c         |



Wolf & I-87 NB Off-Ramp Exit 3 Airport Connector 4 to 6

Clough, Harbour & Associates LLP Manual Turning Movement Count

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File Name: Wolf - Exit 4 NB Off-Ramp PM Site Code: 71106002 Start Date: 7/11/2006 Page No: 4

Peak Hour Data 2525 13 3 2541 Total Peak Hour Begins at 16:30 Passenger Vehicles SU Trucks & Buses MU Trucks 1543 In 863 North 861 869 2 998 Out 0000 0000 Left 989 Out 1988 7 9 2004 473 473 464 464 128 0 1 129 129 129 0 0 0 0 78-1 0 0 0



Exit 3 Airport Connector Wolf & I-87 NB Off-Ramp

4 to 6

Clough, Harbour & Associates LLP Manual Turning Movement Count

III Winners Circle, P.O. Box 5269 Albany, NY 12205 www.cloughharbour.com

File Name: Wolf - Exit 4 NB Off-Ramp PM Site Code: 71106002 Start Date: 7/11/2006 Page No: 3

| Southbound   | And and and and of Property of Type  |            |          | Wolf Boad  | 75       |            |            | *    | olf Road |      |           |      | 1-87 N | -87 NB Off-Ramp | amp |           |             |          |       |  |  |            |
|--|--|------------|----------|------------|----------|------------|------------|------|----------|------|-----------|------|--------|-----------------|-----|-----------|-------------|----------|-------|--|--|------------|
| 260         0         0         0         371         0         8         379         106         0         41         0           260         0         0         0         0         371         0         8         379         106         0         41         0           200         0         0         0         0         449         1         2         452         109         0         33         0           200         0         0         0         0         449         1         2         452         109         0         33         0           200         0         0         0         0         0         449         1         2         452         109         0         26         0           219         0         0         0         0         0         0         129         0         26         0         26         0         0         0         0         26         149         1         12         154         473         0         129         0         21.44         0         129         0         0         1         0         1 <th< th=""><th></th><th></th><th>ú</th><th>outhbou</th><th>ַ בַ</th><th></th><th></th><th>. 0</th><th>rthboun</th><th>. 75</th><th></th><th></th><th>ű</th><th>stboun</th><th>7</th><th></th><th></th><th></th><th></th><th>A CONTRACTOR OF THE PERSON NAMED IN CONT</th><th>per la parente con constitue esty della deletata</th><th></th></th<> |  |            | ú        | outhbou    | ַ בַ     |            |            | . 0  | rthboun  | . 75 |           |      | ű      | stboun          | 7   |           |             |          |       | A CONTRACTOR OF THE PERSON NAMED IN CONT | per la parente con constitue esty della deletata |            |
| 260         0         0         0         371         0         8         379         106         0         41           200         0         0         0         0         0         0         449         1         2         452         109         0         33           200         0         0         0         0         0         0         1         366         140         0         26           219         0         0         0         0         0         0         1531         1         12         1544         473         0         26           871         0         0         0         0         0         0         1531         1         12         1544         473         0         129           873         000         0         0         0         0         0         0         129         0         129           863         0         0         0         0         0         0         0         128         0         128           99.1         0         0         0         0         0         0         0         0 <th< th=""><th>Start Time</th><th></th><th></th><th>Right</th><th>Peds</th><th>App. Total</th><th>Left</th><th>Thru</th><th>Right</th><th></th><th>pp. Total</th><th>Left</th><th>Thru</th><th>Right</th><th></th><th>pp. Total</th><th>Left</th><th>Thru</th><th>Right</th><th>- 1</th><th>App. Total</th><th>Int. Total</th></th<>  | Start Time   |            |          | Right      | Peds     | App. Total | Left       | Thru | Right    |      | pp. Total | Left | Thru   | Right           |     | pp. Total | Left        | Thru     | Right | - 1  | App. Total                                       | Int. Total |
| 260         0         0         0         371         0         8         379         106         0         41           200         0         0         0         0         449         1         2         452         109         0         33           200         0         0         0         0         0         0         1         366         140         0         26           219         0         0         0         0         0         1         366         140         0         26           871         0         0         0         0         0         0         129         0         26           873         0         0         0         0         0         0         0         129         0         129           873         0         0         0         0         0         0         0         128         0         128           99.1         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0  | Dook Hour Analys   | ic From    | 16:00 to | 17.45 - P  | pak 1 of | -          |            |      |          |      |           |      |        |                 |     |           |             |          |       |  |  |            |
| 1         260         0         0         0         371         0         8         379         106         0         41           0         200         0         0         0         0         449         1         2         452         109         0         33           1         219         0         0         0         0         0         0         1         366         140         0         26           2         871         0         0         0         0         0         0         1531         1         12         1544         473         0         26           20         873         0         0         0         0         0         159         0         129         0         214           500         838         0         0         0         0         0         0         0         129         0         129           500         838         0         0         0         0         0         0         1449         1         12         455         109         0         149           500         863         0         0  | המשר וסכו המשל   | 2          | 20.00    | 2          | 3        | -          |            |      |          |      |           |      |        |                 |     |           |             |          |       |  |  |            |
| 1         260         0         0         371         0         8         379         106         0         41           0         200         0         0         0         449         1         2         452         109         0         33           1         219         0         0         0         0         0         12         452         109         0         20           2         200         0         0         0         0         0         12         440         0         26           0.2         871         0         0         0         0         0         129         0         129           0.2         0         0         0         0         0         0         129         0         129           0.2         0         0         0         0         0         0         0         128         0         129           0         0         0         0         0         0         0         128         0         128           0         0         0         0         0         0         0         0         0  | Peak Hour for Ent  | ire Inters | ection B | egins at 1 | 16:30    |            |            |      |          |      |           |      |        |                 |     |           |             |          |       |  | _  |            |
| 0         260         0         260         0         0         0         0         0         449         1         2         452         106         0         41           0         200         0         0         0         0         0         0         449         1         2         452         109         0         33           0         218         0         1         249         1         2         452         109         0         33           0         218         0         0         0         0         0         0         1         366         140         0         26           0         869         0         2         871         0         0         0         0         0         129         0         129           0         99         0         0         0         0         0         0         0         0         0         144         0         129           0         99         0         0         0         0         0         0         0         0         0         0         0         0         0         0         <  | 16:30  | 0          | 191      | ,          | -        | meneror    |            |      |          |      |           |      |        |                 |     |           |             | •        | ;     | Ċ  | 1  | 700        |
| 0         200         0         200         0         0         0         449         1         2         452         109         0         33           0         218         0         1         219         0         0         0         0         0         365         140         0         26           0         218         0         0         0         0         0         0         123         1         12         154         473         0         26           0         99.8         0         0         0         0         0         0         129         0         129         0         129           0         99.8         0         0         0         0         0         0         124         473         0         129           0         99.8         0         0         0         0         0         0         0         124         473         0         124           0         0         0         0         0         0         0         0         0         124         473         0         124           0         0         0 </td <td>16.45</td> <td>c</td> <td>260</td> <td>C</td> <td>C</td> <td>260</td> <td>C</td> <td>C</td> <td>C</td> <td>0</td> <td>0</td> <td>0</td> <td>371</td> <td>0</td> <td>σ</td> <td>379</td> <td>106</td> <td>0</td> <td>41</td> <td>)</td> <td>14/</td> <td>00/</td>   | 16.45  | c          | 260      | C          | C        | 260        | C          | C    | C        | 0    | 0         | 0    | 371    | 0               | σ   | 379       | 106         | 0        | 41    | )  | 14/  | 00/        |
| 0         250         0         0         365         0         1         366         140         0         26           0         869         0         2         871         0         0         0         0         1531         1         12         1544         473         0         129           0         99.8         0         0.2         871         0         0         0         0         0         129         786         0         21.4           0.00         .36         .00         .00         0         0         0         0         129         786         0         21.4           .000         .836         .000 </td <td>10.1</td> <td>&gt; &lt;</td> <td>3 6</td> <td>0</td> <td>0 0</td> <td>300</td> <td>o c</td> <td>· c</td> <td>· c</td> <td>· c</td> <td>c</td> <td>· C</td> <td>449</td> <td>-</td> <td>ς.</td> <td>452</td> <td>109</td> <td>0</td> <td>83</td> <td>0</td> <td>142</td> <td>794</td>   | 10.1   | > <        | 3 6      | 0          | 0 0      | 300        | o c        | · c  | · c      | · c  | c         | · C  | 449    | -               | ς.  | 452       | 109         | 0        | 83    | 0  | 142  | 794        |
| 0         218         0         1         219         0 <td>00:71</td> <td>&gt;</td> <td>3</td> <td>) ·</td> <td>ο.</td> <td>000</td> <td><b>o</b> (</td> <td>&gt; &lt;</td> <td>&gt; &lt;</td> <td>&gt; 0</td> <td>0 0</td> <td>o c</td> <td>100</td> <td>• &lt;</td> <td>۱ -</td> <td>366</td> <td>140</td> <td>c</td> <td>26</td> <td>C</td> <td>166</td> <td>751</td>  | 00:71  | >          | 3        | ) ·        | ο.       | 000        | <b>o</b> ( | > <  | > <      | > 0  | 0 0       | o c  | 100    | • <             | ۱ - | 366       | 140         | c        | 26    | C  | 166  | 751        |
| 0         869         0         2         871         0         0         0         0         1531         1         12         1544         473         0         129           0         99.8         0         0.2         0         0         0         0         0         0         10.0         124         473         0         124           0.000         .836         .000         .000         .000         .000         .000         .000         .852         .250         .375         .854         .845         .000         .787           0         861         0         0         0         0         0         0         128         .000         .787         .444         0         128           0         99.1         0         0         0         0         0         99.5         100         10         99.2           0<   | 17:15  | 0          | 218      | 0          | _        | 219        | >          | >    | >        | >    | >         | >    | 200    | >               | -   | 000       | 2           | > 0      | 1 0   | 0  | 000  | 1.400      |
| 0         99.8         0         0.2         0         0         0         0         99.2         0.1         0.8         78.6         0         21.4           .000         .836         .000         .000         .000         .862         .250         .375         .854         .845         .000         .787           .000         .836         .000 <td>Total Volume</td> <td>c</td> <td>869</td> <td>c</td> <td>٥</td> <td>871</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1531</td> <td>-</td> <td>72</td> <td>1544</td> <td>473</td> <td>0</td> <td>129</td> <td>0</td> <td>200</td> <td>200</td>  | Total Volume   | c          | 869      | c          | ٥        | 871        | 0          | 0    | 0        | 0    | 0         | 0    | 1531   | -               | 72  | 1544      | 473         | 0        | 129   | 0  | 200  | 200        |
| 39.0         39.0         39.0         30.0 <th< td=""><td>John Total</td><td>o c</td><td>8 8</td><td>o c</td><td>i 0</td><td></td><td>· C</td><td>· C</td><td>· C</td><td>c</td><td></td><td>C</td><td>66</td><td>0.1</td><td>0.8</td><td></td><td>78.6</td><td>0</td><td>21.4</td><td>0</td><td></td><td></td></th<>   | John Total   | o c        | 8 8      | o c        | i 0      |            | · C        | · C  | · C      | c    |           | C    | 66     | 0.1             | 0.8 |           | 78.6        | 0        | 21.4  | 0  |  |            |
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Exit 3 Airport Connector Wolf & I-87 NB Off-Ramp

4 to 6

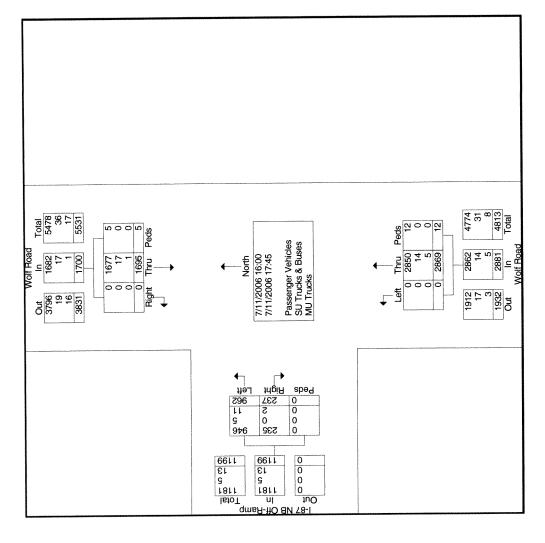
Clough, Harbour & Associates LLP Manual Turning Movement Count

III Winners Circle, P.O. Box 5269

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File Name: Wolf - Exit 4 NB Off-Ramp PM

Site Code : 71106002 Start Date : 7/11/2006 Page No : 2





Clough, Harbour & Associates LLP III Winners Circle, P.O. Box 5269 Albany, NY 12205 Manual Turning Movement Count

Exit 3 Airport Connector Wolf & I-87 NB Off-Ramp

PM 4 to 6

File Name: Wolf - Exit 4 NB Off-Ramp PM Site Code: 71106002 Start Date: 7/11/2006 Page No: 1

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| 0         857         0         2         859         0         0         0         1429         0         9         1438         497         0         110         0           0         208         0         0         0         0         0         0         1429         0         9         1438         497         0         110         0           0         218         0         1         248         1         2         452         109         0         110         0           0         208         0         0         0         0         0         0         0         0         266         0         318         107         0         266         0         328         10         328         10         328         10         328         10         328         10         328         10         328         10         328         10         328         10         328         10         328         10         328         10         328         10         328         10         328         11         12         2882         962         0         127         0         127         0 </td <td>16:45</td> <td>0</td> <td>260</td> <td>0</td> <td>0</td> <td></td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>С</td> <td>C</td> <td>371</td> <td>c</td> <td>α</td> <td>370</td> <td>2 5</td> <td>o c</td> <td>3 -</td> <td>0 0</td> <td>74.</td> <td>7 00</td>   | 16:45  | 0   | 260  | 0  | 0             |     | 0             | 0             | 0             | 0       | С  | C        | 371         | c        | α       | 370       | 2 5          | o c  | 3 -         | 0 0           | 74.         | 7 00   |
| 0         200         0         0         449         1         2         452         109         0         33         0           0         218         0         1         219         0         0         0         0         365         0         1         366         140         0         26         0         26         0         0         0         0         386         107         0         38         0         0         386         107         0         38         0         386         0         386         0         386         0         386         0         386         0         386         0         127         0         0         0         0         0         318         109         0         326         0         326         0         127         0         0         0         0         0         1440         1         3         1444         465         0         127         0  | Total  | 0   | 857  | 0  | 2             |     | 0             | 0             | 0             | 0       | 0  | 0        | 1429        | o        | σ       | 1438      | 497          | 0    | 1 5         | > <           | 14/         | 00/  |
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| 0         218         0         1         219         0         0         0         365         0         1         366         103         0         36         0         366         103         0         36         0         36         107         0         36         0         36         0         36         107         0         36         0         36         107         0         36         0         37         0         1         0         36         0         37         0         1         1         0         0         0         0   | 17:00  | 0   | 200  | 0  | 0             | 200 | 0             | 0             | 0             | C       | c  | C        | 440         | -        | c       | 45.0      | 9            | c    | ć           | (             | 7           | 1  |
| 0         208         0         0         208         0         0         308         0         0         308         140         0         26         0         0         308         107         0         26         0         0         318         107         0         26         0         0         318         107         0         36         0         0         38         107         0         38         0         0         318         107         0         38         0         0         318         107         0         38         0         0         318         107         0         38         0         0         318         107         0         32         0         127         0   | 17:15  | 0   | 218  | 0  | -             | 219 | c             | c             | · c           | ) C     | 0 0  | o c      | 9 9         | - c      | ٠ ١     | 700       | 60           | > 0  | ဂ္ဂ (       | <b>&gt;</b> • | 147         | 76/  |
| 0         212         0         226         0         0         0         0         0         0         0         0         308         107         0         36         107         0         36         0           0         212         0         2         214         0   | 17:30  | _   | acc  | • <  | ٠ ر           | 2 6 | o 0           | 0 (           | 0             | ، د     | <b>O</b>   | >        | 200         | >        | _       | 300       | 140          | 0    | 56          | 0             | 166         | 751  |
| 0         212         0         2         214         0         0         0         0         318         0         0         318         0         0         318         0         0         318         109         0         32         0           0         638         0         3         841         0         0         0         0         0         0         127         0           0         99.7         0         0.3         1700         0 <td< td=""><td>17.45</td><td>0</td><td>9 6</td><td>0</td><td><b>&gt;</b> (</td><td></td><td><b>-</b></td><td>5</td><td>&gt;</td><td>0</td><td>0</td><td>0</td><td>308</td><td>0</td><td>0</td><td>308</td><td>107</td><td>0</td><td>36</td><td>0</td><td>143</td><td>656</td></td<>  | 17.45  | 0   | 9 6  | 0  | <b>&gt;</b> ( |     | <b>-</b>      | 5             | >             | 0       | 0  | 0        | 308         | 0        | 0       | 308       | 107          | 0    | 36          | 0             | 143         | 656  |
| 0         838         0         3         841         0         0         0         0         1440         1         3         1444         465         0         127         0           0         1695         0         5         1700         0         0         0         0         0         2869         1         12         2882         962         0         237         0         1           0         99.7         0         0.3         0   | C4. /-   | 0   | 717  | )  | 7             |     | 0             | 0             | 0             | 0       | 0  | 0        | 318         | 0        | 0       | 318       | 109          | 0    | 32          | О             | 141         | 673  |
| 0         1695         0         5         1700         0         0         0         0         2869         1         12         2882         962         0         237         0           0         99.7         0         0.3         0         0         0         0         0         0         0         19.8         0         19.8         0         19.8         0         19.8         0   | Olai   | >   | 838  | 0  | m             |     | 0             | 0             | 0             | 0       | 0  | 0        | 1440        | -        | က       | 1444      | 465          | 0    | 127         | 0             | 592         | 2877   |
| 0         99.7         0         0.3         0 <td>Grand Total</td> <td>0</td> <td>1695</td> <td>0</td> <td>5</td> <td></td> <td>0</td> <td>0</td> <td>0</td> <td>C</td> <td>C</td> <td>c</td> <td>2869</td> <td>4-</td> <td>5</td> <td>COBC</td> <td>CaO</td> <td>c</td> <td>201</td> <td>c</td> <td>4</td> <td></td>  | Grand Total  | 0   | 1695   | 0  | 5             |     | 0             | 0             | 0             | C       | C  | c        | 2869        | 4-       | 5       | COBC      | CaO          | c    | 201         | c             | 4           |  |
| 0         29.3         0         0.1         29.4         0         0         0         0         49.6         0         0.2         49.9         16.6         0         4.1         0           0         98.9         0         0         0         0         0         0         99.3         100         100         99.3         16.6         0         4.1         0           0         17         0         0         0         0         0         0         14         0         0         14         0         0         14         0 <td>Apprch %</td> <td>0</td> <td>99.7</td> <td>0</td> <td>0.3</td> <td></td> <td>0</td> <td>0</td> <td>0</td> <td>c</td> <td>)</td> <td>· c</td> <td>8<br/>8<br/>7</td> <td>- c</td> <td>, C</td> <td>7007</td> <td>200</td> <td>&gt; &lt;</td> <td>150</td> <td>&gt; 0</td> <td>88</td> <td>2/81</td>   | Apprch %   | 0   | 99.7   | 0  | 0.3           |     | 0             | 0             | 0             | c       | )  | · c      | 8<br>8<br>7 | - c      | , C     | 7007      | 200          | > <  | 150         | > 0           | 88          | 2/81   |
| 0         98.9         0         100         98.9         0         0         0         99.3         100         100         99.3         100         100         99.3         100         100         99.2         0         0         0         0         14         0         0         14         0         0         14         0         0         14         0         0         14         0  | Total %  | 0   | 29.3   | 0  | 0.1           |     | 0             | 0             | C             | · c     | C  | · c      | 40.5        | o c      | ; c     | 000       | 4 60.7       | > 0  | 0.7         | > 0           | 1           |  |
| 0         98.9         0         100         98.9         0         0         0         0         99.3         100         100         99.3         100         100         99.3         100         100         99.2         0         0         99.2         0         0         99.2         0         0         0         0         0         14         0         0         14         0         0         14         0         0         14         0         0         14         0 <td>Passenger Vehicles</td> <td></td> <td></td> <td>THE PARTY OF THE P</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>)</td> <td></td> <td>2</td> <td></td> <td>2.0</td> <td>49.9</td> <td>0.0</td> <td>&gt;</td> <td>+,-</td> <td>0</td> <td><b>7</b>.</td> <td>79 Per 1919 (1919) (191</td> | Passenger Vehicles   |   |  | THE PARTY OF THE P |               |     |               |               |               |         | )  |          | 2           |          | 2.0     | 49.9      | 0.0          | >    | +,-         | 0             | <b>7</b> .  | 79 Per 1919 (1919) (191 |
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| 0 0.1 0 0 0.1 0 0 0 0 0 0 0 0 0 0 0 0 0   | MII Trucks   | C   | -  |  |               |     |               |               |               |         |  | ٥        | 0.0         | 5        | 0       | 0.5       | 0.5          | 0    | 0           | 0             | 4.0         | 9.0  |
|   | % MII Trucke   | 0 0   | - +  | 0  | 0             | - ; | <b>&gt;</b> ( | <b>&gt;</b> ( | <b>&gt;</b> · | >       | <b>&gt;</b>  | 0        | S.          | 0        | 0       | 2         | <del>-</del> | 0    | N           | 0             | 13          | 19   |
|   | SADDI OM S   | >   | -<br>-<br>-  | >  | >             | 5   | >             | 0             | 0             | 0       | 0  | 0        | 0.2         | 0        | 0       | 0.2       | <del>-</del> | 0    | 0.8         | 0             | <del></del> | 0.3  |



Wolf Rd & Albany Shaker Exit 3 Airport Connector 4 to 6

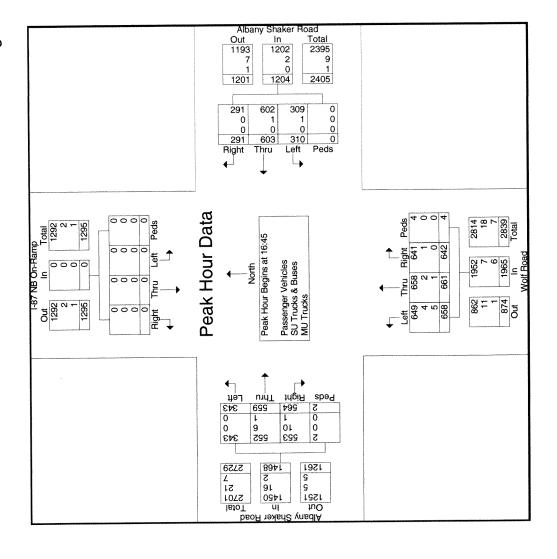
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File Name: Albany Shaker - Wolf PM Site Code: 71106006

Start Date : 7/11/2006 Page No : 4





Wolf Rd & Albany Shaker Exit 3 Airport Connector

4 to 6 ₽

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File Name: Albany Shaker - Wolf PM Site Code: 71106006 Start Date: 7/11/2006 Page No: 3

|  |              | 1-87          | I-87 NB On-Ramo | Ramp    |                 |          | Albany      | y Shaker Road | Road          |            |              | 3    | Wolf Road |      |            |               | Albany      | Albany Shaker Road | Road   |            |            |
|--|--------------|---------------|-----------------|---------|-----------------|----------|-------------|---------------|---------------|------------|--------------|------|-----------|------|------------|---------------|-------------|--------------------|--|------------|------------|
|  |              | Š             | Southbound      | -       |                 |          | 3           | estbound      | 70            |            |              | 2    | rthboun   | 0    |            |               | Ä           | Eastbound          | -  |            |            |
| And the second s |              | į             |                 |         |                 | 4-       | F           | tqoid         | Dade          | Ann Total  | #al          | Thru | Right     | Peds | App. Total | Left          | Thru        | Right              | Peds A   | App. Total | Int. Total |
| Start lime   | Lett         |               | Inru Hight      |         | Peds App. lotal | Ē        | 2 = -       | 1160          |               | App. Total |              |      | 2         | _    |            |               |             |                    | a post a resident de la company de la compan |            |            |
| Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1   | sis From 1   | 16:00 to      | 17:45 - F       | Peak 10 | _               |          |             |               |               |            |              |      |           |      |            |               |             |                    |  |            |            |
| Peak Hour for Entire Intersection Begins at 16:45  | tire Intersu | ection B      | egins at        | 16:45   |                 |          |             |               |               | -          | !            |      |           |      | -          |               | 160         | 4<br>7             |  | 416        | 1233       |
| 16.45  | <b>C</b>     | c             | ,               | C       | C               | 83       | 144         | 11            | 0             | 304        | 170          | 203  |           |      |            |               | 60          | 3                  | (  |            | 1 7        |
| 10.43  | > •          | <b>&gt;</b> ( | > 0             | 0 (     | •               | 3 8      | 7 7         | 6             | · c           | 070        | 176          | 188  | 183       | 0    | 547        | 72            | 143         | 124                | 0  | 333        | 201        |
| 12:00  | 0            | 0             | 0               | )       | <b>O</b>        | 3 :      | 04.         | 3 3           | > 0           | 4 00       |              | 2 6  | 77.       | · C  | 456        | ą.            | 114         | 155                | 7  | 366        | 1124       |
| 17:15  | 0            | 0             | 0               | 0       | 0               | 8        | 138         | 84            | >             | 305        | <del>5</del> | 2 3  | 2 ;       | ۰ د  | 2 5        | 3 6           | . 6         | 130                | · C  | 347        | 1122       |
| 17.30  | c            | C             | C               | C       | 0               | 84       | 175         | 29            | 0             | 326        | 167          | 134  | 144       | 4    | 443        | 5             | 2           | 3                  |  | 200        | 1004       |
| 30.7   |              |               |                 |         |                 | 310      | 603         | 291           | c             | 1204       | 658          | 661  | 642       | 4    | 1965       | 343           | 559         | 564                | N  | 1400       | 4037       |
| I otal Volume  | <b>&gt;</b>  | >             | 0               | · C     | -               | 5 5      | 3 3         |               | •             | }          | 3000         | 33.6 | 20.7      | 0    |            | 23.4          | 38.1        | 38.4               | 0.1  |            |            |
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| што  | 000          | 000           | C               | 000     | 000             | 923      | .861        | 998.          | 000           | .923       |              | 814  | .877      | CZZ. | 080.       | SOS.          | 170.        | 2 0                | 5  | 1 (        | P 0 0 Y    |
|  | 3            | 200           | 9               |         |                 | 1        | 603         | 201           | c             | 1202       |              | 658  | 641       | 4    | 1952       | 343           | 552         | 553                | N  | 1450       | 4004       |
| Passenger Vehicles   | >            | >             | >               | כ       | -               | 5 5      | 400         | 2 4           | 0             | 2 2        |              | 100  | 00        | 100  | 00         | 100           | 7.86        | 0.86               | 90   | 98.8       | 99.3       |
| % Passenger Vehicles   | 0            | 0             | 0               | 0       | 0               | 99.7     | 99.8        | 3             | >             | 0.0        |              | 99.0 | 0.00      | 3    | 1 (        | 2             | . (d        | 10                 | C  | 4          | 25         |
| a contract to  | C            | C             | С               | 0       | 0               | -        |             | 0             | 0             | 2          |              | N    | _         | >    | ,          | <b>&gt;</b> ( | ,           | 2 ,                | > <  | *          | ы<br>С     |
| SO ITUCKS & DUSES  |              | • •           | · C             |         |                 | 0        | 0           | C             | 0             | 0.2        |              | 0.3  | 0.5       | 0    | 4.0        | 0             | _           | Σ.                 | <b>-</b>   | 1          |            |
| % SU Trucks & Buses  | >            | י כ           | <b>&gt;</b> (   | ) ر     |                 | 9        | į           |               | · c           | _          |              | -    | C         | C    | g          | 0             | <del></del> | <del></del>        | 0  | N          | œ          |
| MU Trucks  | 0            | 0             | 0               | ی       | د               | <b>-</b> | <b>&gt;</b> | <b>&gt;</b> ( | <b>&gt;</b> ( | 0          |              | - 0  | 0 0       | ) C  | 0 0        | · C           | 0           | 0                  | С  | 0.1        | 0.5        |
| % MU Trucks  | 0            | 0             | 0               | ی       | 0               | 0        | 0           | 0             | 0             | 5          |              | 0.7  | >         | >    | 5          | >             | )<br>i      | į                  | •  |            |            |



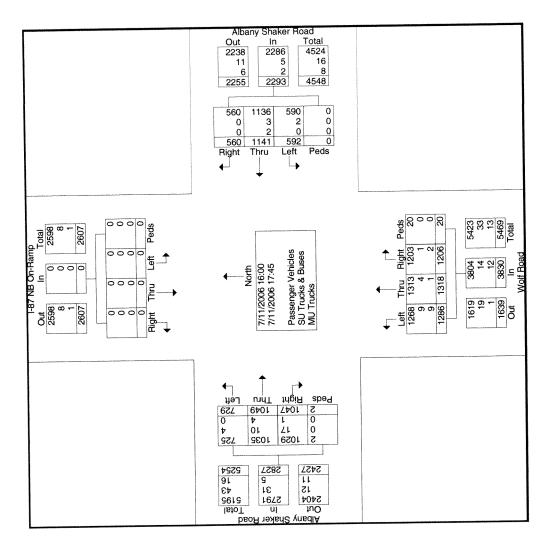
Wolf Rd & Albany Shaker Exit 3 Airport Connector 4 to 6

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File Name: Albany Shaker - Wolf PM Site Code: 71106006

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Exit 3 Airport Connector Wolf Rd & Albany Shaker

4 to 6

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File Name: Albany Shaker - Wolf PM Site Code: 71106006 Start Date: 7/11/2006 Page No: 1

|  |  |  |                 | III. Olal   | 1067       | 1132     | 100   | 1030  | 4522  |       | 1158          | 1124  | 1122     | 1024  | 4428 | 0           | 8820         |         |                    | ć                    | 33.2              | 2                   | 9.0          | 5             | 0.2          |
|--|--|--|-----------------|-------------|------------|----------|-------|-------|-------|-------|---------------|-------|----------|-------|------|-------------|--------------|---------|--------------------|----------------------|-------------------|---------------------|--------------|---------------|--------------|
|  | MAAR STREET, SAN |  | -               | Арр. готал  | 352        | 351      | 343   | 346   | 1461  | 6     | 955           | 300   | 347      | 314   | 1366 | 1000        | 1707         | ,       | 31.0               | 7                    | 30.7              | <u> </u>            | <del>-</del> | ĸ             | 0.2          |
|  | Road   | ,  | Dodo            | cpa.        | 0          | C        | · c   | o c   | 0     | c     | <b>&gt;</b> 0 | N :   | 0        | 0     | 2    | c           | ۷ +          |         | 0                  | 9                    | 3 0               | >                   | 0            | С             | 0            |
|  | Albany Shaker Road                                   | Fasthound  | tabio           | 1161        | 128        | 114      | . 5   | 15.5  | 517   | 7     | 47.4          | က္က   | 130      | 121   | 230  | 4047        | 2 6          | , č     | \                  | 6 00                 | 20.0              | - :                 | 9.           | -             | 0.1          |
|  | Albany   | ш  | I Product       | 2           | 125        | 121      | 107   | 160   | 545   | 4     | 2 ;           | 4 6   | 133      | 117   | 507  | 1040        | 2 + 10       | - 1     |                    | 7 00                 | 200               | 2 .                 | -            | 4             | 0.4          |
|  |  |  | #a              | 3           | 66<br>6    | 116      | 9     | 8 8   | 402   | 72    | 7 2           | င္တ   | 84       | 9/    | 327  | 7.00        | 0 40         | 9 0     |                    | 00 5                 | 5.5               | † i                 | 0.5          | 0             | 0            |
| S  |  |  | Ann Total       | ישוטו ילקלי | 464        | 484      | 447   | 513   | 1908  | 277   | 7 4           | 450   | 448      | 470   | 1922 | 3830        | 3            | 40.0    | 46.0               | 00                   | 2.5               | - (                 | O.4          | 72            | 0.3          |
| SU Trucks & Buses - MU Trucks  | 70   | þ  | spec            |             | 0          | 16       | C     | · c   | 16    | c     | o c           | > <   | 4        | 0     | 4    | 0           | א כ          | 9 0     | i                  | 100                  | 3                 | 0                   | 0            | 0             | 0            |
| uses - M   | Wolf Road  | Northbound   | Right           |             | 146        | 131      | 131   | 140   | 548   | 183   | 3 4           | 2 7   | 44       | 156   | 658  | 1206        | 2 2          |         | 5                  | 8 66                 | -                 |                     | -<br>-       | N             | 0.2          |
| cks & B  | 5  | ž  | Thru            |             | 160        | 157      | 167   | 203   | 687   | 188   | 136           | 3 5   | 4        | 173   | 631  | 1318        | 34.4         | 14.7    | 1.1                | 9 66                 | 4                 |                     | D.0          | <b></b>       | 0.1          |
| SU Tru   |  |  | Left            |             | 158        | 180      | 149   | 170   | 657   | 176   | 145           | 2 1   | <u>`</u> | 141   | 629  | 1286        | 33.6         | 14.4    |                    | 98.6                 | 6                 | 1 0                 | >.           | თ             | 0.7          |
| ted- Passenger Vehicles -  |  |  | App. Total      |             | 7221       | 297      | 301   | 304   | 1153  | 272   | 305           | 100   | 020      | 240   | 1140 | 2293        |              | 25.6    | 2                  | 99.7                 | 5                 | 0                   | V. 0         | N             | 0.1          |
| enger V  | r Road   | g  | Peds            | -           | >          | 0        | 0     | 0     | 0     | O     | · C           | o c   | > 0      | 0     | 0    | 0           | C            | C       | •                  | 0                    | 0                 | · C                 |              | 0             | 0            |
| ed-Pass  | y Shaker Road  | Vestbound  | Right           | , 6         | 80         | 69       | 7     | 11    | 286   | 63    | 84            | . 2   | 6 6      | 3     | 274  | 260         | 24.4         | 6.3     |                    | 100                  | 0                 | c                   | 0            | >             | 0            |
| <b>Groups Print</b>  | Alban  | \$   | Thru            | 20          | 77         | 157      | 151   | 144   | 574   | 146   | 138           | 175   | - +      | 3 5   | 26/  | 1141        | 49.8         | 12.7    |                    | 9.66                 | က                 | 6                   | 5            | N             | 0.5          |
| Grou   |  |  | Left            | 00          | 3          | 7        | 79    | 83    | 293   | 63    | 8             | 84    | 7 (      | 7/    | 662  | 592         | 25.8         | 9.9     |                    | 99.7                 | 24                | 0                   | 9            | >             | 0            |
|  |  |  | Peds App. Total |             | <b>o</b> ( | 0        | 0     | 0     | 0     | 0     | 0             | C     | 0 0      | > 0   | 5    | 0           |              | 0       |                    | 0                    | 0                 | C                   | 0            | > 1           | 0            |
|  | lamp   | 밀  | Peds '          | C           | 0 (        | )        | 0     | 0     | 0     | 0     | 0             | 0     | • <      | 0     | >    | 0           | 0            | 0       |                    | 0                    | 0                 | С                   |              | <b>)</b>      | 0            |
|  | I-87 NB On-Ramp                                      | Southbound   | Right           | c           | 0 0        | <b>-</b> | 0     | 0     | 0     | 0     | 0             | 0     | · C      | 0     | >    | 0           | 0            | 0       |                    | 0                    | 0                 | 0                   | c            | > (           | )            |
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|  |  |  | Left            | c           | 0 0        | ) c      | 0     | 0     | 0     | 0     | 0             | 0     | c        | 0     | >    | 0           | 0            | 0       |                    | 0                    | 0                 | 0                   | c            | 0 0           | >            |
|  |  | The state of the s | Start Time      | 16:00       | 16:45      | 10.13    | 16:30 | 16:45 | Total | 17:00 | 17:15         | 17:30 | 17.45    | TetoT | 1000 | Grand Total | % Habbarch % | Lotal % | Passenger Vehicles | % Passenger Vehicles | SU Trucks & Buses | % SU Trucks & Buses | MII Trucks   | O'MIT TIME '0 | % IMO Trucks |

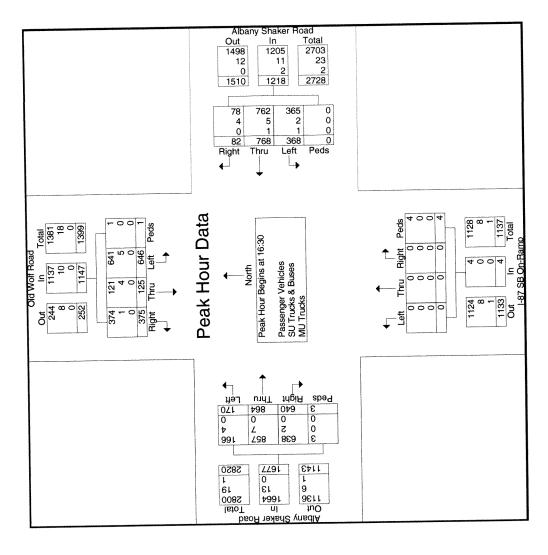


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Albany Shaker & Old Wolf Rd Exit 3 Airport Connector 4 to 6



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Albany Shaker & Old Wolf Rd PM

4 to 6

Exit 3 Airport Connector

|  |           | PO        | Old Wolf Road              | ad      | ALL COLORS OF THE PARTY OF THE | ALLAS ALAS PURITAMENTO ALLAS AND ALL |        | Shaker Road | Road   |            |      | I-87 S | -87 SB On-Ramp | È,            |            |              | Albany S<br>Eas | Ubany Shaker Road<br>Eastbound | Road |   | Assessment of the Assessment o |
|--|-----------|-----------|----------------------------|---------|---|--|--------|-------------|--------|------------|------|--------|----------------|---------------|------------|--------------|-----------------|--------------------------------|------|---|--|
|  |           | S         | Southbound                 | ع       |   |  | M      | estbound    |        |            |      | 2      |                |               |            |              | L               | tqui C                         | Dode | Ann Total                               | Int Total  |
| Start Time Left                                      | Left      | Thru      | Thru Right Peds App. Total | Peds    | App. Total  | Left   | Thru   | Right       | Peds / | App. Total | Left | Thru   | Right          | Peds App      | App. Total | Leff         | nun             | าเดิน                          |      | pp. Total                               | HIL. LOWER   |
| סומו -   |           |           | ָ                          | 10 4 00 |   | 1  |        |             |        |            |      |        |                |               |            |              |                 |                                |      |   |  |
| Peak Hour Analysis From 16:00 to 17:45 - Feak 1 of 1 | S From    | 6:00 10   | 17:45 - FE                 | ak o    | _   |  |        |             |        |            |      |        |                |               |            |              |                 |                                |      |   |  |
| Deak Hour for Entire Intersection Begins at 16:30    | re Inters | action Be | voins at 10                | 3:30    |   |  |        |             |        | -          |      | ,      | (              | ć             | •          |              |                 |                                |      |   |  |
| 16:30  | 134       | 60        | 85                         | 0       | 248   | 87   | 185    | 17          | 0      | 588        | 0    | 0      | <b>)</b>       | י מי          | · c        | 9            | 040             | 160                            | c    | 429                                     | 1038   |
| 1000   |           | 0         | 40                         | -       | 287   |  | 506    | 25          | 0      | 321        | 0    | 0      | 0              | -             | _          | <del>0</del> | 6 .             | 2 1                            | 1 0  | 0                                       | 1000   |
| 16:45  | 20        | 0         | 3                          | -       | 0   |  |        | L           | •      | 000        | C    | c      | C              | C             | 0          | 83           | 201             | 158                            | >    | 382                                     | 22   |
| 17:00  | 165       | 5         | 113                        | 0       | 329   |  | //     | 0           | >      | 727        | > 0  | 0 (    | • •            | o c           | · C        | 77           | 224             | 164                            | 0    | 452                                     | 1051   |
| 17.15  | 164       | 27        | 92                         | 0       | 283   | 94   | 197    | 25          | 0      | 316        | 0    | 0      | 0              | 0             | >          | 2 2          | 700             | 640                            | ď    | 1677                                    | 4046   |
| Total Value  | 278       | 105       | 375                        | -       | 1147  |  | 768    | 82          | 0      | 1218       | 0    | 0      | >              | 4             | 4          | 2 :          | t 1             | 2 6                            | 0 0  | 5                                       |  |
| loga voluile   | 5         | 3         | 5                          |         | :   |  |        | 1           | c      |            | _    | c      | C              | 00            |            | 10.1         | 51.5            | 38.2                           | J.C  | \$1000000000000000000000000000000000000 | -  |
| % App. Total   | 56.3      | 10.9      | 32.7                       | 0.1     |   | 30.2   | 53.1   | 0.7         | 0      | 0.00       | 9    | 000    | 000            | 333           | 333        | 664          | 964             | 976                            | .375 | .928                                    | .962   |
| 410  | 883       | .613      | .830                       | .250    | .872  |  | .919   | .820        | 3      | 948        | 000. | 39.    | 3              | 33.           | 20.        | 100          | 957             | 838                            | c.   | 1664                                    | The second secon |
|  | 641       | 101       | 274                        | +       | 1137  |  | 762    | 78          | 0      | 1205       | 0    | 0      | >              | 4             | 7          | 2            | S S             | 1 9                            | 2    |   |  |
| Passenger Vehicles                                   | 5         | - U - C   | 5 6                        | - (     | 5   |  | 00     | 05.1        | c      | 080        | С    | 0      | 0              | 9             | 8          | 97.6         | 33.5            | 99.7                           | 3    | 33.5                                    |  |
| % Passenger Vehicles                                 | 99.5      | 96.8      | 99.7                       | 3       | 93  |  | 33.5   |             | •      | ; *        | · c  | · c    | _              | c             | C          | 4            | 7               | Q                              | 0    | 13                                      |  |
| SH Trucks & Buses                                    | S         | 4         | -                          | 0       | 9   | 0  | ည      | 4           | >      | = ;        | > 0  | > 0    | > 0            | <b>o</b> c    | · C        | 0            | α <             | 03                             | С    | 0.8                                     |  |
|  | α ς       | 0.00      | 0                          | 0       | 0.0   |  | 0.7    | 6.4         | 0      | 6.0        | 0    | >      | >              | <b>&gt;</b> ' | > 0        | t o          | ,               | ) c                            | • •  |   |  |
| % SO Frucks a buses                                  | 9 0       |           | ,                          | · C     | C   |  | -      | c           | 0      | 7          | 0    | 0      | 0              | 0             | 0          | >            | >               | > 1                            | ) (  | 0 (                                     |  |
| MO I rucks   | >         | >         | <b>O</b>                   | · c     | · ·   | - (  | - •    | o c         | · C    | 0          | c    | C      | C              | C             | 0          | 0            | 0               | 0                              | 0    | <b>O</b>                                |  |
| % MU Trucks  | 0         | 0         | 0                          | 0       | 0   | 0.3  | _<br>; | >           | >      | 4.0        | >    | •      | •              |               | -          |              |                 |                                |      |   |  |



Albany Shaker & Old Wolf Rd Exit 3 Airport Connector

4 to 6

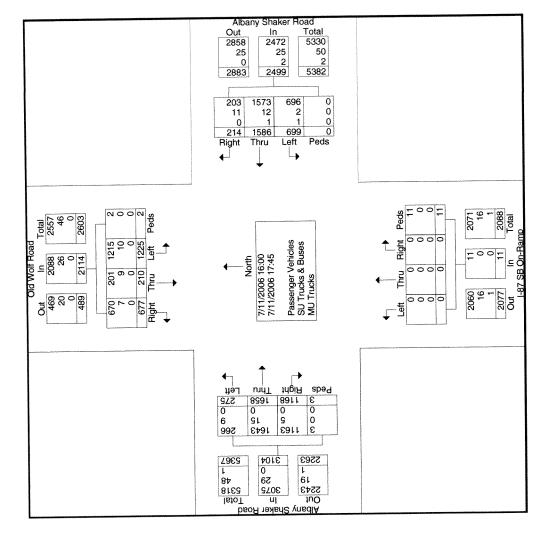
Clough, Harbour & Associates LLP Manual Turning Movement Count

III Winners Circle, P.O. Box 5269

Albany, NY 12205 www.cloughharbour.com

File Name: Albany Shaker - Old Wolf PM

Site Code : 71106004 Start Date : 7/11/2006 Page No : 2





Exit 3 Airport Connector Albany Shaker & Old Wolf Rd PM 4 to 6

Clough, Harbour & Associates LLP III Winners Circle, P.O. Box 5269 Albany, NY 12205 Manual Turning Movement Count

File Name: Albany Shaker - Old Wolf PM Site Code: 71106004 Start Date: 7/11/2006 Page No: 1

| And a second control of the second control o | A THE REPORT OF A PROPERTY OF | A CALLAND AND A CALLAND A CALLAND AND A CALLAND A CALLAND AND A CALLAND AND A CALLAND AND A CALLAND A CALL |               |      |                 | Group | os Printe | d- Pass            | enger V | Groups Printed- Passenger Vehicles - SU Trucks & Buses - MU Trucks | SU Truc | ks & Bu | Ses - M  | U Truck      | ,          |  |        |                          |                |  |   |
|--|---|--|---------------|------|-----------------|-------|-----------|--------------------|---------|--|---------|---------|--|--------------|------------|--|--------|--------------------------|----------------|--|---|
|  |   | ŏ  | Old Wolf Road | Soad |                 |       | Alban     | Albany Shaker Road | Road    |  |         | I-87 S  | I-87 SB On-Ramp  | amp          |            | PERSONAL PROPERTY OF THE PERSON NAMED AND POST OF THE PERSON NAMED AND POS | Albany | Albany Shaker Road       | Road           | And the second s |   |
|  |   | ഗ്   | Southbound    | pur  |                 |       | \$        | Westbound          | ā       |  |         | Š       | Northbound   | তু           |            |  | , щ    | Eastbound                | 703            |  |   |
| Start Time   | Left  | Thru   | Right         |      | Peds App. Total | Left  | Thru      | Right              | Peds A  | App. Total   | Left    | Thru    | Right  | Peds /       | App. Total | Leff   | Thru   | Right                    | Peds           | App. Total   | Int. Total  |
| 16:00  |   | 18   | 85            | 0    | 251             |       | 191       | 38                 | 4       | 303  | 0       | 0       | 0  |              | 0          | 27   | 202    | 126                      |                | 355  | o<br>O  |
| 16:15  |   | 38   | 92            | 0    | 267             |       | 242       | 27                 | 0       | 359  | 0       | 0       | 0  | 4            | 4          | , &  | 216    | 157                      | ) C            | 401  | 123   |
| 16:30  |   | 29   | 82            | 0    | 248             |       | 185       | 17                 | 0       | 289  | c       | · c     | · C  | · 07         | · «        | 3 6  | 200    | 4 5<br>8 2<br>8 2<br>8 3 | · ·            | 2 5  | 3 4   |
| 16:45  |   | 18   | 85            | -    | 287             |       | 508       | 52                 | 0       | 321  | 0       | 0       | 0  | ·            | ,          | 8 8  | 219    | 160                      | - ۸            | 424  | 1038  |
| Total  | 602   | 103  | 347           | -    | 1053            | (,)   | 827       | 107                | 0       | 1272   | 0       | 0       | 0  | 80           | 8          | 138  | 857    | 601                      | ı m            | 1599   | 3932  |
| 17:00  | 165   | 51   | 113           | 0    | 329             |       | 177       | 15                 | 0       | 292  | 0       | 0       | 0  | 0            | 0          | 88   | 50     | 158                      | C              | 382  | 1003  |
| 17:15  |   | 27   | 92            | 0    | 283             |       | 197       | 52                 | 0       | 316  | 0       | 0       | 0  | 0            | C          | 9  | 224    | 164                      | · C            | 452  | 105   |
| 17:30  |   | 14   | 2             | 0    | 239             | 88    | 212       | 4                  | 0       | 340  | 0       | 0       | 0  | ·            | · -        | 8  | 25     | 110                      | 0 0            | 344  | 8   |
| 17:45  |   | 15   | 55            | -    | 210             |       | 173       | 27                 | 0       | 279  | 0       | 0       | 0  | . 01         | . 64       | 27   | 174    | 126                      | 0              | 327  | 818   |
| Total  | 623   | 107  | 330           | -    | 1061            | 361   | 759       | 107                | 0       | 1227   | 0       | 0       | 0  | 3            | 3          | 137  | 801    | 292                      | 0              | 1505   | 3796  |
| Grand Total  | 1225  | 210  | 229           | 8    | 2114            | 669   | 1586      | 214                | 0       | 2499   | 0       | 0       | 0  | <del>-</del> | -          | 275  | 1658   | 1168                     | e              | 3104   | 7728  |
| Apprch %   |   | 6.6  | 35            | 0.1  |                 | 28    | 63.5      | 8.6                | 0       |  | 0       | 0       | 0  | 100          | •          | 6  | 53.4   | 37.6                     | ) <del>-</del> | ·<br>}<br>·  | 2   |
| Total %  | 1   | 2.7  | 8.8           | 0    | 27.4            | 6     | 20.5      | 2.8                | 0       | 32.3   | 0       | 0       | 0  | 0.1          | 0.1        | 3.6  | 21.5   | 15.1                     | 0              | 40.5   |   |
| Passenger Vehicles   |   |  |               |      |                 |       |           |                    |         |  |         |         | The state of the s |              |            | ***************************************  |        |                          |                |  | This is a said of the said and |
| % Passenger Vehicles   | 99.2  | 95.7   | 66            | 100  | 98.8            | 9.66  | 99.2      | 94.9               | 0       | 98.9   | 0       | 0       | 0  | 100          | 100        | 96.7   | 99.1   | 9.66                     | 100            | 1 66   | 6.86  |
| SU Trucks & Buses  |   | တ  | 7             | 0    | 26              |       | 12        | F                  | 0       | 25   | 0       | 0       | 0  | 0            | 0          | 6  | 15     | 2                        | 0              | 29   | 08  |
| % SU Trucks & Buses  | O.  | 4.3  | -             | 0    | 1.2             | 0.3   | 0.8       | 5.1                | 0       | -  | 0       | 0       | 0  | 0            | 0          | 3.3  | 6.0    | 0.4                      | 0              | 6  | } •   |
| MU Irucks  |   | 0  | 0             | 0    | 0               |       | -         | 0                  | 0       | 2  | 0       | 0       | 0  | 0            | 0          | 0  | 0      | 0                        | 0              | C  |   |
| % MU Trucks  | 0   | 0  | 0             | 0    | 0               | 0.1   | 0.1       | 0                  | 0       | 0.1  | 0       | 0       | 0  | 0            | 0          | 0  | 0      | 0                        | 0              | 0  | 0 1   |



Manual Turning Movement Count

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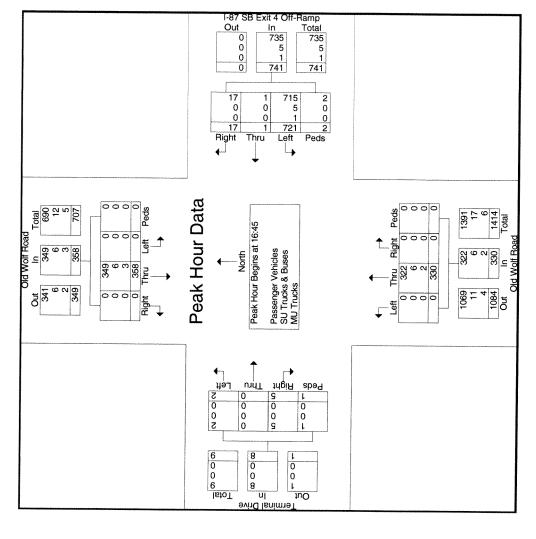
Exit 3 Airport Connector Old Wolf Rd & I-87 SB Exit 4 Off-Ramp PM

4 to 6

File Name: Old Wolf - Exit 4 SB PM Site Code: 62906008

Start Date : 6/29/2006 Page No : 4

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Manual Turning Movement Count

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Exit 3 Airport Connector Old Wolf Rd & I-87 SB Exit 4 Off-Ramp

4 to 6

File Name: Old Wolf - Exit 4 SB PM Site Code: 62906008 Start Date: 6/29/2006 Page No: 3

|  |             | ŏ       | Old Wolf Road | peo                        |            |      | I-87 SB E | Exit 4 Off-Ramp | f-Ramp |            |      | PIO  | Old Wolf Road | ad     |            |      | Term | Ferminal Drive | ۸e       |            |  |
|--|-------------|---------|---------------|----------------------------|------------|------|-----------|-----------------|--------|------------|------|------|---------------|--------|------------|------|------|----------------|----------|------------|--|
|  |             | ŭ       | Southbound    | 2                          |            |      | We        | estbound        | •      |            |      | Š    | Northbound    | ס      |            |      | Eä   | Eastbound      |          |            | THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, TH |
| Start Time   | Left        | Thru    | Right         | Thru Right Peds App. Total | App. Total | Left | Thru      | Right           | Peds A | App. Total | Left | Thru | Right         | Peds A | App. Total | Left | Thru | Right          | Peds A   | App. Total | Int. Total   |
| Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of | is From 1   | 6:00 to | 17:45 - P     | eak 1 of 1                 |            |      |           |                 |        |            |      |      |               |        |            |      |      |                |          |            |  |
| Peak Hour for Entire Intersection Begins at 16:45  | ire Interse | ction B | egins at 1    | 6:45                       |            |      |           |                 |        |            |      |      |               |        |            |      |      |                |          | •          | 0  |
| 16.45  | c           | 96      | ,<br>,        | 0                          | 96         | 180  | 0         | 4               | _      |            |      |      |               |        |            |      |      |                |          | 2          | 8  |
| 17:00  | · C         | 115     | · C           | c                          | 1.         | 166  | •         | m               | 0      | 170        | 0    | 29   | 0             | 0      | 29         | -    | 0    | <del></del>    | 0        | N          | 354  |
| 7.00   | o c         | 2 6     | o             | o c                        | 5          | 174  | . c       | ^               | •      | 182        | 0    | 6    | 0             | 0      | 93         | 0    | 0    | 7              | 0        | ~          | 368  |
| 17:30  | o c         | - 6     | o C           | o c                        | . 22       | 207  | o C       | . m             | 0      | 204        | 0    | 82   | 0             | 0      | 82         | •    | 0    | <del>,</del>   | 0        | a          | 347  |
| Total Volume                                       | c           | 358     |               | C                          | 358        | 721  | ,         | 17              | 2      | 741        | 0    | 330  | 0             | 0      | 330        | 2    | 0    | 5              | •        | ω          | 1437   |
| % Ann Total  | o C         | 100     | 0             | 0                          | )          | 97.3 | 0.1       | 2.3             | 0.3    | aanna.     | 0    | 100  | 0             | 0      |            | 52   | 0    | 62.5           | 12.5     |            |  |
| PHF  | 000         | 778     | 000           | 000                        | 778        | 788. | .250      | .607            | .500   | 906.       | 000  | .887 | 000           | 000:   | 788.       | .500 | 000. | .625           | .250     | 1.000      | 976.   |
| soloido)/ resonosod                                | 0           | 349     |               | 0                          | 349        | 715  | -         | 17              | 2      | 735        | 0    | 322  | 0             | 0      | 322        | 7    | 0    | 2              | <b>-</b> | ∞          | 1414   |
| 9. Descriper Verices                               | · c         | 97.5    | · C           | 0                          | 97.5       | 99.2 | 8         | 100             | 100    | 99.2       | 0    | 9.76 | 0             | 0      | 97.6       | 100  | 0    | 9              | 100      | 100        | 98.4   |
| Cold Tayoko & Busoo                                | · C         | 9       | · C           | · C                        | ç          | ĸ    | 0         | 0               | 0      | 2          | 0    | 9    | 0             | 0      | 9          | 0    | 0    | 0              | 0        | 0          | 17   |
| % SIJ Tencke & Busses                              | 0           | 1.7     | 0             | 0                          | 1.7        | 0.7  | 0         | 0               | 0      | 0.7        | 0    | 4.   | 0             | 0      | <b>1</b> . | 0    | 0    | 0              | 0        | 0          | 1.2  |
| MU Trucks  | 0           | က       | 0             | 0                          | က          |      | 0         | 0               | 0      | <b>Y</b>   | 0    | 7    | 0             | 0      | Ø          | 0    | 0    | 0              | 0        | 0          | U  |
| % MU Trucks  | 0           | 0.8     | 0             | 0                          | 0.8        | 0.1  | 0         | 0               | 0      | 0.1        | 0    | 9.0  | 0             | 0      | 9.0        | 0    | 0    | 0              | 0        | 0          | 0.7  |



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Old Wolf Rd & I-87 SB Exit 4 Off-Ramp

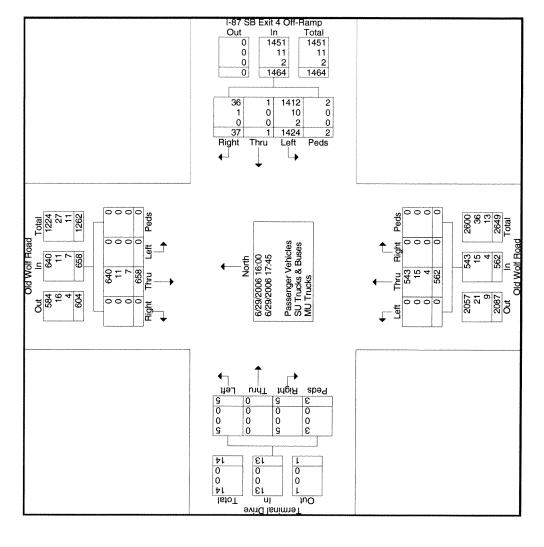
4 to 6

Exit 3 Airport Connector

File Name: Old Wolf - Exit 4 SB PM Site Code: 62906008

: 6/29/2006 : 2

Start Date: Page No:





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Exit 3 Airport Connector Old Wolf Rd & I-87 SB Exit 4 Off-Ramp PM

4 to 6

File Name: Old Wolf - Exit 4 SB PM Site Code: 62906008 Start Date: 6/29/2006 Page No: 1

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|--|--|--------------|---------------|-----------------|-------------|--------|---------------|-----------------|---------------|-------------|--------------------------|--|--|---|-----------|---------------|---------------|-----------------------|---------------|-----------|---|
|  |  | 5 6          | Old Wolf Hoad | oad<br>oad      |             | -      | I-87 SB E     | Exit 4 Off-Ramp | f-Ramp        |             |                          | PO   | Old Wolf Road  | ad  |           |               | Terr          | <b>Terminal Drive</b> | ive           |           |   |
|  | -  | ဂ္ဂ          | Southbound    | 2               |             |        | ž             | Vestbound       | 0             |             |                          | Š  | Northbound   | 9   |           |               | Ш             | Eastbound             | 7             |           |   |
| Start Time   | Left   | Thr          | Right         | Peds App. Total | App. Total  | Left   | Thru          | Right           | Peds Ap       | App. Total  | Left                     | Thru   | Right  | Peds A  | Ann Total | He l          | Thru          | Richt                 | Dode          | Ann Total | lot T tol                               |
| 16:00  | 0  | 91           | 0             | 0               | 91          | 181    | c             | o               |               | 90          | -                        | 77   | ,  | ored.   | Pp. Out   | 1             | 3 (           | 50                    | - 3           |           | mr. IQia                                |
| 16:15  | 0  | 71           | C             | · c             | 7.1         | 158    | o c           | ) (J            | 0 0           | 2 5         | <b>&gt;</b> 0            | ‡ 6  | <b>&gt;</b> (  | <b>&gt;</b> (   | 44        | _             | 0             | )                     | 0             | -         | 326                                     |
| 16:30  | · C  | 8            | 0 0           | o c             | - 8         | 0 1    | 0             | <b>o</b> (      | <b>&gt;</b> ( | 40          | >                        | 5  | >  | 0   | 63        |               | 0             | 0                     | <b></b>       | N         | 300                                     |
| 16.45  | <b>o</b> c   | 2 6          | > 0           | > 0             | 26          | 165    | <b>o</b>      | က               | 0             | 168         | 0                        | 24   | 0  | 0   | 54        | -             | 0             | 0                     | 0             | -         | 315                                     |
| 24.07  |  | 0 0          | 0             | 0               | 3           | 180    | 0             | 4               | -             | 185         | 0                        | 85   | 0  | 0   | 82        | 0             | 0             | -                     | -             | 0         | 368                                     |
| 10g  | >  | 000          | >             | >               | 320         | 684    | 0             | 23              | -             | 707         | 0                        | 246  | 0  | 0   | 246       | က             | 0             |                       | 5             | 9         | 1309                                    |
| 17:00  | 0  | 115          | 0             | 0               | 115         | 166    | -             | က               | C             | 170         | c                        | 67   | c  | c   | 23        | +             | c             | •                     | (             | Ć         | i                                       |
| 17:15  | 0  | 9            | 0             | 0               | 91          | 174    | c             | ۰,              | · <del></del> | 180         | · c                      | 3 8  | > <  | <b>o</b> c  | 6 6       | - (           | > 0           | - (                   | <b>&gt;</b> ( | N I       | 354                                     |
| 17:30  | C  | 56           | c             | · C             | . ((        | . 6    | 0 0           | ٠ ،             | - (           | 70.0        | > 0                      | 2 1  | <b>&gt;</b> •  | >   | 56        | 0             | 0             | N                     | 0             | 2         | 368                                     |
| 17.45  | o C  | 9 4          | 0 0           | 0 0             | 9 4         | 107    | <b>&gt;</b> ( | n (             | <b>&gt;</b> ' | 204         | 0                        | 82   | 0  | 0   | 85        |               | 0             | <del></del>           | 0             | N         | 347                                     |
| 5.77   | 0  | 5 6          | 0             | 0               | 40          | 199    | 0             | 2               | 0             | 201         | 0                        | 71   | 0  | 0   | 71        | 0             | 0             | 0                     |               | -         | 319                                     |
| 800  | >  | 909          | )             | >               | 89          | /40    |               | 15              | <del></del>   | 757         | 0                        | 316  | 0  | 0   | 316       | 2             | 0             | 4                     | -             | 7         | 1388                                    |
| Grand Total  | 0  | 658          | 0             | 0               | 658         | 1424   | <del></del>   | 37              | ď             | 1464        | c                        | 562  | c  | c   | Can       | t.            | c             | L                     | Ć             | (         |   |
| % Hobbach %  | 0  | 9            | 0             | 0               | december of | 97.3   | C             | 5 6             | ) t           |             | o c                      | 9 5  | <b>&gt;</b> c  | > <   | 200       | O F           | > 0           | Ω I                   | ,<br>S        | 55        | 7697                                    |
| Total %  | 0  | 24.4         | 0             | 0               | 24.4        | 52.8   | C             | 1 4             |               | 543         | o c                      | 2 6  | > <  | > 0   | 9         | 0,0           | <b>&gt;</b> ( | 30.5                  | 23.1          |           |   |
| Passenger Vehicles   |  |              |               |                 |             |        |               |                 | 5             | 2.          | >                        | 0.02   | >  | 0   | δ.        | 7.0           | 0             | 0.2                   | 0.1           | 0.5       | *************************************** |
| % Passenger Vehicles   | 0  | 97.3         | 0             | 0               | 97.3        | 99.2   | 100           | 97.3            | 100           | 00          | C                        | 9 90   | c  | c   | 90        | 5             | c             | •                     | ,             | 9         |   |
| SU Trucks & Buses  | 0  | <del>-</del> | 0             | 0               | =           | 10     | c             | -               | 2             | -           |                          | 7.00   | > 0  | 0   | 0.00      | 3             | 5             | 3                     | 3 (           | 3         | 98.1                                    |
| % SU Trucks & Buses  | 0  | 1.7          | 0             | 0               | 1.7         | 0.7    | · C           | - 2             | o c           | - α<br>- c  | <b>&gt;</b>              | 9 6  | <b>&gt;</b> c  | > 0   | 1 2       | <b>&gt;</b> 0 | <b>)</b>      | <b>&gt;</b> (         | ۰ د           | 0         | 37                                      |
| MU Trucks  | 0  | 7            | C             | C               | 7           | 6      | 0             | i               |               | 2 0         | >                        | 6.1  |  | 0   | 7.7       | 0             | 0             | 0                     | 0             | 0         | 4.                                      |
| % MU Trucks  | 0  | <del>-</del> | 0             | 0               |             | , c    | > c           | <b>&gt;</b> c   | > 0           | V +         | > 0                      | 4 1  | <b>)</b>   | <b>)</b>  | 4 1       | 0 (           | 0             | 0                     | 0             | 0         | 13                                      |
| -  |  |              |               | ,               | :           | -<br>5 | >             | >               | >             | -<br>-<br>- | >                        |  | >  | >   | 0.7       | 0             | 0             | 0                     | 0             | 0         | 0.5                                     |



Albany Shaker & Alb Int Terminal

4 to 6

Exit 3 Airport Connector

Manual Turning Movement Count

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Albany, NY 12205 www.cloughharbour.com

File Name: Albany Shaker - Alb Int Term Access PM

Site Code : 71106010

Start Date : 7/11/2006 Page No

Shaker In 783 1 3 787 Albany Out 1640 6 2 1648 Total 2423 7 5 2435 0 0 0 0 Right 0 0 0 0 Peds 783 1 3 787 Thru Peak Hour Data Peak Hour Begins at 16:30 Passenger Vehicles SU Trucks & Buses MU Trucks North 208 0 0 265 57 0 0 57 Hight 135 135 0 0 132 0 0 7 2 0 32 132 spad 1432 6 2 1440 Thru Albany tuO 840 1 5 844 1567 1567 1567 | bac | totoT | 704S | 9 | 6 | 6 | 542



Albany Shaker & Alb Int Terminal

4 to 6 PM

Exit 3 Airport Connector

Manual Turning Movement Count

## Clough, Harbour & Associates LLP

III Winners Circle, P.O. Box 5269
Albany, NY 12205
Www.cloughharbour.com

File Name: Albany Shaker - Alb Int Term Access PM Site Code: 71106010 Start Date: 7/11/2006 Page No: 3

| Start Time Left Thru Right Peds App. Total Int. |                 | Alba     | any Inte<br>S | Nbany International Airport Exit<br>Drive<br>Southbound | al Airpo<br>and | r Exit     | Alban | Mbany Shaker Road<br>Westbound | r Road<br>nd |            |      | Albar | Nbany Shaker Road<br>Eastbound | ır Road<br>nd |            |      |      |       |      |            |   |
|---|-----------------|----------|---------------|---|-----------------|------------|-------|--------------------------------|--------------|------------|------|-------|--------------------------------|---------------|------------|------|------|-------|------|------------|---|
| Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1  | Start Time      | Left     | Thru          | Right   | Peds            | App. Total | Thru  | Right                          | Peds         | App. Total | Left | Thru  | Right                          | Peds          | App. Total | Left | Thru | Hight | Peds | App. Total | Ξ |
|   | eak Hour Analy: | sis From | 16:00 to      | 17:45 - P   | eak 1 of        | -          |       |                                |              |            |      |       |                                |               |            |      |      |       |      |            |   |

|  | Č          |           | Drive      | Drive Southbound | Ĭ                                       |      | Albany | Shaker Road estbound | Road   |             |   | Albany<br>Ea | Ibany Shaker Road<br>Eastbound | Road    |            |      |      |                                     |  |            |            |
|--|------------|-----------|------------|------------------|---|------|--------|----------------------|--------|-------------|---|--------------|--------------------------------|---------|------------|------|------|-------------------------------------|--|------------|------------|
| Start Time   | Left       |           | Right      | Peds             | Thru Right Peds App. Total              | Left | Thru   | Right                | Peds A | App. Total  | Left                                    | Thru         | Right                          | Peds Ap | App. Total | Left | Thru | Right                               | Peds A   | App. Total | Int. Total |
| Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of | is From    | 16:00 to  | 17:45 - Pt | eak 1 of         | -                                       |      |        |                      |        | -           | *************************************** |              |                                |         |            |      |      | ANALOG ANALOG WATER TOTAL PROPERTY. | and the state of t |            |            |
| Peak Hour for Entire Intersection Begins at 16:30  | ire Inters | ection Be | egins at 1 | 16:30            |   |      |        |                      |        |             |   |              |                                |         |            |      |      |                                     |  |            |            |
| 16:30  | 99         |           | 2          |                  | 88                                      |      |        |                      |        |             |   |              |                                |         |            |      | 428  |                                     |  | 464        | 738        |
| 16:45  | 34         | 0         | 12         | 0                | 46                                      | 0    | 191    | 0                    | 0      | 191         | 0                                       | 0            | 0                              | 0       | 0          | 38   | 336  | 0                                   | 0  | 374        | 611        |
| 17:00  | 25         | 0         | 19         | 0                | 71                                      | _    | 217    | 0                    | 0      | 218         | 0                                       | 0            | 0                              | 0       | 0          | 8    | 349  | 0                                   | 0  | 379        | 668        |
| 17:15  | 24         | 0         | 9          | 0                | 09                                      | 0    | 193    | 0                    | 0      | 193         | 0                                       | 0            | 0                              | 0       | 0          | 8    | 327  | 0                                   | 0  | 360        | 613        |
| Total Volume                                       | 208        | 0         | 22         | 0                | 265                                     | -    | 787    | 0                    | 0      | 788         | 0                                       | 0            | 0                              | 0       | 0          | 137  | 1440 | 0                                   | 0  | 1577       | 2630       |
| % App. Total                                       | 78.5       | 0         | 21.5       | 0                | *************************************** | 0.1  | 6.66   | 0                    | 0      |             | 0                                       | 0            | 0                              | 0       |            | 8.7  | 91.3 | 0                                   | 0  |            |            |
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| Passenger Vehicles                                 | 208        | 0         | 22         | 0                | 265                                     | -    | 783    | 0                    | 0      | 784         | 0                                       | 0            | 0                              | 0       | 0          | 135  | 1432 | 0                                   | 0  | 1567       | 2616       |
| % Passenger Vehicles                               | 100        | 0         | 100        | 0                | 100                                     | 100  | 99.5   | 0                    | 0      | 99.5        | 0                                       | 0            | 0                              | 0       | 0          | 98.5 | 99.4 | 0                                   | 0  | 99.4       | 99.5       |
| SU Trucks & Buses                                  | 0          | 0         | 0          | 0                | 0                                       | 0    |        | 0                    | 0      | <del></del> | 0                                       | 0            | 0                              | 0       | 0          | 7    | 9    | 0                                   | 0  | 80         | ნ          |
| % SU Trucks & Buses                                | 0          | 0         | 0          | 0                | 0                                       | 0    | 0.1    | 0                    | 0      | 0.1         | 0                                       | 0            | 0                              | 0       | 0          | 5.   | 0.4  | 0                                   | 0  | 0.5        | 0.3        |
| MU Trucks  | 0          | 0         | 0          | 0                | 0                                       | 0    | က      | 0                    | 0      | က           | 0                                       | 0            | 0                              | 0       | 0          | 0    | 2    | 0                                   | 0  | 7          | 5          |
| % MU Trucks  | 0          | 0         | 0          | 0                | 0                                       | 0    | 0.4    | 0                    | 0      | 0.4         | 0                                       | 0            | 0                              | 0       | 0          | 0    | 0.1  | 0                                   | 0  | 0.1        | 0.2        |
|  |            |           |            |                  |   |      |        |                      |        |             |   |              |                                |         |            |      |      |                                     |  |            |            |



Albany Shaker & Alb Int Terminal

4 to 6

Exit 3 Airport Connector

Manual Turning Movement Count

## Clough, Harbour & Associates LLP

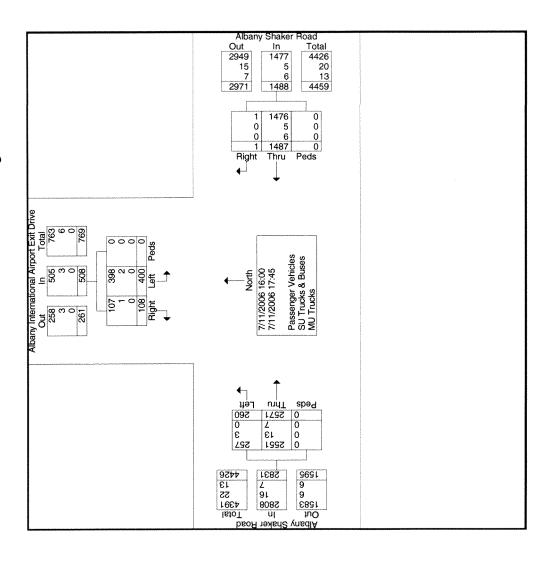
III Winners Circle, P.O. Box 5269 Albany, NY 12205

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File Name: Albany Shaker - Alb Int Term Access PM

Site Code : 71106010 Start Date : 7/11/2006

Page No





Manual Turning Movement Count

# Clough, Harbour & Associates LLP III Winners Circle, P.O. Box 5269 Albany, NY 12205 File Nam

Albany Shaker & Alb Int Terminal PM

4 to 6

Exit 3 Airport Connector

File Name: Albany Shaker - Alb Int Term Access PM Site Code: 71106010 Start Date: 7/11/2006 Page No: 1

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| THE REAL PROPERTY AND ADDRESS OF THE PERSON NAMED AND ADDRESS |  |                                   |            | ***    |                                       | ביסמל | Groups Printe | d- Pass            | ed- Passenger Vehicles - SU Trucks & Buses - MU Trucks | hicles -   | SU Truc       | ks & Bu       | ses - ML           | 1 Trucks |           |      |              |       |     |            |            |
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|   | Alba   | Albany International Airport Exit | nationa    | Airpor | t Exit                                |       |               |                    |  |            |               |               |                    |          |           |      |              |       |     |            |            |
|   |  |                                   | Drive      |        |                                       |       | Albany        | Albany Shaker Road | Road   |            |               | Albany        | Albany Shaker Road | Road     |           |      |              |       |     |            |            |
|   | And the second s | S                                 | Southbound | pu     |                                       |       | ₹             | estbound           | ğ  |            |               | Ëä            | Eastbound          |          |           |      |              |       |     |            |            |
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| 16:45   | 3 6  | > <                               | 2 5        | > 0    | S G                                   |       | 92            | 0                  | 0  | 186        | 0             | 0             | 0                  | 0        | 0         | 36   | 428          | 0     | 0   | 464        | 738        |
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| Olai  |  | 0                                 | ဂို        | 0      | 260                                   | -     | 758           | -                  | 0  | 760        | 0             | 0             | 0                  | 0        | 0         | 139  | 1379         | 0     | 0   | 1518       | 2538       |
| 17:00   | 52   | 0                                 | 19         | 0      | 71                                    | •     | 217           | C                  | c  | 910        | c             | c             | c                  | (        | -         | ć    |              | ,     |     |            |            |
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| 17:45   | 48   | · c                               | <u> </u>   | o c    | † c                                   | > 0   | 2 7           | > 0                | <b>)</b>   | 9/         | ۰ د           | 0             | 0                  | 0        | 0         | 34   | 265          | 0     | 0   | 533        | 529        |
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| Passenger Vehicles  |  |                                   |            |        |                                       |       |               | >                  |  | 8.9        |               | >             | >                  | )        | 5         | 5.4  | 53.2         | 0     | 0   | 58.6       |            |
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Manual Turning Movement Count

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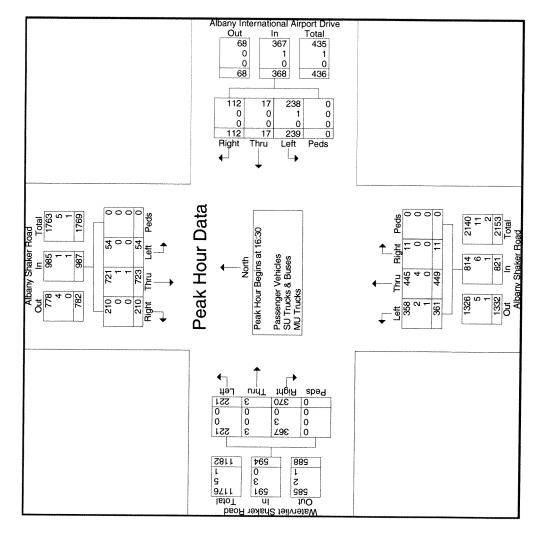
> Albany Shaker & Watervliet Shaker Exit 3 Airport Connector

4 to 6 PM

Albany, NY 12205 www.cloughharbour.com

File Name: Albany Shaker - Watervliet Shaker PM : 62806002 : 6/28/2006 Site Code

Start Date Page No



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File Name: Albany Shaker - Watervliet Shaker PM Site Code: 62806002 Start Date: 6/28/2006 Page No: 3

Manual Turning Movement Count

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Manual Turning Movement Count

Clough, Harbour & Associates LLP

III Winners Circle, P.O. Box 5269 Albany, NY 12205

Albany Shaker & Watervliet Shaker

4 to 6 ₽

Exit 3 Airport Connector

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File Name: Albany Shaker - Watervliet Shaker PM Site Code: 62806002

: 6/28/2006 : 2 Start Date : Page No :



Manual Turning Movement Count

Clough, Harbour & Associates LLP
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Albany, NY 12205
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Albany Shaker & Watervliet Shaker PM

4 to 6

Exit 3 Airport Connector

File Name: Albany Shaker - Watervliet Shaker PM Site Code: 62806002 Start Date: 6/28/2006 Page No: 1

| Southbound         Weart Time         Left         Thru         Right         Peds         App. Total         Left         Thru           Factor         1.0  |              |           | Alban) | Albany Shaker Road | r Road |            | Albai | Albany International Airport Drive Albany Shaker Road | national Airport Drive | Virport | Drive      |      | Albany | Albany Shaker Road | Road   |           |            | Watervliet Shaker Boad | ot Shak                                 | or Roar       | THE CONTRACT OF STREET, STREET |   |
|---|--------------|-----------|--------|--------------------|--------|------------|-------|---|------------------------|---------|------------|------|--------|--------------------|--|-----------|------------|------------------------|---|---------------|--|---|
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| 1.0         1.0 <th>Time</th> <th>Left</th> <th>Thru</th> <th>Right</th> <th></th> <th>App. Total</th> <th>Left</th> <th>Thru</th> <th>Right</th> <th>Peds</th> <th>App. Total</th> <th>Left</th> <th>Thru</th> <th>Right</th> <th>Space</th> <th>Ann Total</th> <th>Heff</th> <th>Thui</th> <th>Richt</th> <th>Pade</th> <th>Ann Total</th> <th>Int Total</th> | Time         | Left      | Thru   | Right              |        | App. Total | Left  | Thru  | Right                  | Peds    | App. Total | Left | Thru   | Right              | Space  | Ann Total | Heff       | Thui                   | Richt                                   | Pade          | Ann Total  | Int Total                               |
| 18     140     42     0     200     85       25     138     53     0     216     50       16     165     57     0     238     54       17     168     44     0     229     72       10     190     43     0     243     57       10     190     43     0     243     57       10     100     44     0     197     63       10     100     50     0     160     51       44     630     203     0     160     51       44     630     203     0     1760     488       6.8     70.5     22.7     0     48     65.1     9       100     99.4     99.2     0     99.4     99.5     1       0     0.4     0.3     0     0.8     0     0       0     0.4     0.3     0     0     0     0       0     0.2     0     0     0     0     0       0     0.2     0     0     0     0     0       100     0.2     0     0     0     0     0       100     0.2<  | Factor       | 1.0       | 1.0    | 1.0                | 1.0    |            | 1.0   | 1.0   | 1.0                    | 1.0     |            | 10   | 10     | , 0                |  | - da      | -          |                        | : C                                     |               | App. Iolai   | III. 10la                               |
| 25     138     53     0     216     50       16     165     57     0     238     54       17     168     44     0     229     72       76     611     196     0     883     261       10     190     43     0     243     57       13     140     44     0     243     57       14     630     203     0     160     51       44     630     203     0     1760     488       6.8     70.5     22.7     0     488       6.8     70.5     22.7     0     34.3     9.5     0       100     99.4     99.2     0     99.4     99.2     1       0     0.4     0.3     0     0.3     0.8       0     0.2     0     0.3     0     0       0     0.2     0.5     0     0     0  | 16:00        | <u>\$</u> | 140    | 42                 | 0      | 200        | 85    | 9   | 41                     | 0       | 132        | 69   | 22     | 2                  | 2  | 151       | 5.0        | 2 +                    | 0.1                                     |               | 90,  | 000                                     |
| 16         165         57         0         238         54           76         611         196         0         883         261           10         190         43         0         243         57           10         190         43         0         243         57           13         140         44         0         197         63           10         100         50         0         160         51           44         630         203         0         1760         488           6.8         70.5         22.7         0         65.1         9           6.8         70.5         22.7         0         99.4         99.2         1           100         99.4         99.2         0         99.4         99.2         1           0         0.3         0.4         0.3         0         0         0           0         0.2         0.5         0         0         0         0         0  | 16:15        | 52        | 138    | 53                 | 0      | 216        | 20    | 9   | 52                     | 0       | 8          | 83   | 82     | 1                  | o c  | 5 5       | 9 0        | - c                    | 5 6                                     | <b>o</b> c    | 9 5  | 200                                     |
| 17         168         44         0         229         72           76         611         196         0         883         261           11         200         66         0         277         56           10         190         43         0         243         57           13         140         44         0         197         63           10         100         50         0         160         51           44         630         203         0         1760         488           6.8         70.5         22.7         0         65.1         9           6.8         70.5         22.7         0         95.4         95.5         0           100         99.4         99.2         7         8         0         9         4           10         99.4         99.2         0         99.4         99.5         1         0           0 <td>16:30</td> <td>16</td> <td>165</td> <td>22</td> <td>0</td> <td>238</td> <td>54</td> <td>7</td> <td>32</td> <td>0</td> <td>8</td> <td>9 2</td> <td>6</td> <td>- თ</td> <td>0 0</td> <td>200</td> <td>44</td> <td>o 0</td> <td>\$ 8</td> <td><b>&gt;</b> C</td> <td>52</td> <td>591<br/>799</td>  | 16:30        | 16        | 165    | 22                 | 0      | 238        | 54    | 7   | 32                     | 0       | 8          | 9 2  | 6      | - თ                | 0 0  | 200       | 44         | o 0                    | \$ 8                                    | <b>&gt;</b> C | 52   | 591<br>799                              |
| 11   200   66   0   277   56   10   190   43   0   243   57   10   190   44   0   197   63   140   44   0   160   51   65   10   100   50   0   160   51   65   10   120   1241   399   0   1760   488   6.8   70.5   22.7   0   85.1   9.5   100   99.4   99.2   1   100   99.4   99.2   1   0   0   0   0   0   0   0   0   0   | 16:45        | 17        | 168    | 4                  | 0      | 229        | 72    | 2   | 92                     | 0       | 9          | 80   | Ξ      | 0                  | 0  | 202       | 150        | 4 0                    | 2 82                                    | o c           | 30.0   | 000<br>670                              |
| 11         200         66         0         277         56           10         190         43         0         243         57           13         140         44         0         197         63           10         100         50         0         160         51           44         630         203         0         1760         488         3           6.8         70.5         22.7         0         65.1         5           2.3         24.2         7.8         0         34.3         9.5         0           100         99.4         99.2         0         99.4         99.2         10           0         5         1         0         6         4         0           0         0.3         0.3         0.8         0         0         0           0         0.2         0.5         0         0         0         0         0   | otal         | 9         | 611    | 196                | 0      | 883        | 261   | 27  | 124                    | 0       | 406        | 334  | 382    | 80                 | 0  | 724       | 173        | 8                      | 348                                     | 0             | 524  | 2537                                    |
| 10         190         43         0         243         57           13         140         44         0         197         63           10         50         0         160         51           44         630         203         0         160         51           120         1241         399         0         1760         488         3           6.8         70.5         22.7         0         65.1         5           2.3         24.2         7.8         0         34.3         9.5         0           100         99.4         99.2         0         99.4         99.2         10           0         5         1         0         6         4         0           0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0  | 17:00        | =         | 200    | 99                 | 0      | 277        | 26    | က   | 56                     | 0       | 85         | 70   | 118    | Ŋ                  | c  | 193       | 56         | 4                      | 400                                     | c             | 166  | 704                                     |
| 13     140     44     0     197     63       10     100     50     0     160     51       44     630     203     0     160     51       120     1241     399     0     1760     488     3       6.8     70.5     22.7     0     65.1     5       2.3     24.2     7.8     0     34.3     9.5     0       100     99.4     99.2     0     99.4     99.2     10       0     5     1     0     6     4     0       0     0.2     0.2     0     0     0     0       0     0.2     0.5     0     0     0     0   | 17:15        | 9         | 9      | 43                 | 0      | 243        | 22    | 5   | 78                     | 0       | 06         | 102  | 123    | •                  | · C  | 926       | 8 6        | - c                    | 3 8                                     | o c           | 2 4  | 740                                     |
| 10         100         50         0         160         51           44         630         203         0         877         227         1           120         1241         399         0         1760         488         3           6.8         70.5         22.7         0         65.1         5           2.3         24.2         7.8         0         34.3         9.5         0           100         99.4         99.2         0         10         4         9         10           0         5         1         0         6         4         0           0         0.2         0.3         0         4         0           0         0.2         0.5         0         0         0  | 17:30        | 13        | 140    | 4                  | 0      | 197        | 83    | Ŋ   | 24                     | 0       | 92         | 9    | 9      | · c                | · c  | 100       | 3 8        | > -                    | 3 8                                     | > <           | 200  | 717                                     |
| 44     630     203     0     877     227       120     1241     399     0     1760     488     3       6.8     70.5     22.7     0     65.1     5       2.3     24.2     7.8     0     34.3     9.5     0       100     99.4     99.2     0     99.4     99.2     10       0     5     1     0     4       0     0.4     0.3     0     0.8       0     0.2     2     0     0       0     0.2     0.5     0     0.2     0  | 17:45        | 9         | 5      | 20                 | 0      | 160        | 51    | 4   | 22                     | 0       | 12         | 75   | 8 8    | ۵ 4                | o c  | 1 2 4     | 9 6        | - c                    | 2 6                                     | <b>&gt;</b> 0 | 3 5  | 4:0                                     |
| 120 1241 399 0 1760 488 6.8 70.5 22.7 0 65.1 5 6.1 5 6.1 100 99.4 99.2 0 99.4 99.2 10 0 0.4 0.3 0 0.2 0.5 0 0.2 0.2 0.5 0 0.2 0.2 0.5 0 0.2 0.2 0.5 0 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0   | Total        | 4         | 630    | 203                | 0      | 877        | 227   | 17  | 100                    | 0       | 344        | 353  | 433    | 10                 | 0  | 796       | 197        | 0                      | 372                                     | 00            | 571  | 0588                                    |
| 6.8 70.5 22.7 0 65.1 5 2.3 24.2 7.8 0 34.3 9.5 0 0 0 0.4 0.3 0 0.8 0 0 0.2 0.5 0 0.2 0.5 0 0.2 0.5 0 0.2 0.5 0 0.2 0.5 0 0.2 0.3 0.8  | nd Total     | 120       | 1241   | 399                | 0      | 1760       | 488   | æ   | 224                    | 0       | 750        | 687  | 815    | ά                  | c  | 1500      | 07.6       | i u                    |   | , ,           |  | 0 0                                     |
| 2.3     24.2     7.8     0     34.3     9.5     0       100     99.4     99.2     0     99.4     99.2     10       0     0.4     0.3     0     0.8     0       0     0.2     2     0     0     0.8       0     0.2     0.5     0     0     0       0     0.2     0.5     0     0     0  | pprch %      | 8.9       | 70.5   | 22.7               | 0      |            | 65.1  | 5.1   | 29.9                   | 0       |            | 45.2 | 53.6   | 5 0                | o c  | 0.70      | ο α<br>ο α | о и<br>С               | 02/                                     | <b>&gt;</b> c | 282  | 5125                                    |
| 100 99.4 99.2 0 99.4 99.2 10<br>0 5 1 0 6 4<br>0 0.4 0.3 0 0.3 0.8<br>0 0.2 2 0 4 0<br>0 0.2 0.5 0 0.2 0  | lotal %      | 2.3       | 24.2   | 7.8                | 0      | 34.3       | 9.5   | 0.7   | 4.4                    | 0       | 14.6       | 13.4 | 15.9   | 0.4                | 0  | 29.7      | 7.2        | 5 0                    | 2.5                                     | o c           | 21.4   |   |
| 100 99.4 99.2 0 99.4 99.2 10<br>0 5 1 0 6 4<br>0 0.4 0.3 0 0.3 0.8<br>0 0.2 2 0 4 0<br>0 0.2 0.5 0 0.2 0  | er Vehicles  |           |        |                    |        |            |       |   |                        |         |            |      |        |                    | the state of the s |           |            |                        | *************************************** |               | 1  | *************************************** |
| 0 5 1 0 6 4<br>0 0.4 0.3 0 0.3 0.8<br>0 2 2 0 4 0<br>0 0.2 0.5 0 0.2 0.5  | Jer Vehicles | 100       | 99.4   | 99.2               | 0      | 99.4       | 99.5  | 100   | 100                    | 0       | 99.5       | 98.3 | 99.3   | 100                | C  | 8         | 00         | 100                    | 00                                      | c             | 0  | ò                                       |
| 0 0.4 0.3 0 0.3 0.8<br>0 2 2 0 4 0<br>0 0.2 0.5 0 0.2 0.  | cs & Buses   | 0         | വ      | -                  | 0      | 9          | 4     | 0   | c                      | C       | 4          | ĸ    | V      |                    | ,  | 5         | 1.00       | 3                      | )<br>)<br>)<br>(                        | > 0           | 33.0   | 33.2                                    |
| 0 0.2 0.5 0 4 0 0.5 0 0.5 0 0.5 0 0.5 0 0.5 0 0.5 0 0.5 0 0.5 0 0.5 0 0.5 0 0 0.5 0 0 0.5 0 0 0 0   | ks & Buses   | 0         | 0.4    | 0.3                | 0      | 0.3        | 0.8   | C   | · C                    | · C     | . r.       | 4 C  | ר ע    | > <                | <b>o</b> c   | 0 0       | - 0        | > 0                    | 1 0                                     | <b>&gt;</b> ( | ا ک  | 52                                      |
| 0 0.2 0.5 0 0.2   | Trucks       | 0         | 2      | 2                  | C      | 4          | c     | c   |                        |         | 2          |      | 5      |                    | ٥  | 0.0       | 0.3        | اد                     | 0.7                                     | 0             | 0.5  | 0.5                                     |
|   | Trucks       | 0         | 0      | ر<br>ا بر          | · C    | - 0        | 0 0   | o c   | <b>&gt;</b> c          | > 0     | 5 0        | - ,  | N 6    | <b>)</b>           | <b>&gt;</b>  | ဘ         | C)         | 0                      | 0                                       | 0             | 2  | 15                                      |
|   | -            |           | !      | )                  | >      | ;<br>i     | >     | >   | >                      | >       | >          |      | 7.0    | <b>&gt;</b>        | 0  | 9.0       | 0.5        | 0                      | 0                                       | 0             | 0.2  | 0.3                                     |

### ATTACHMENT C MICROSIMULATION CALIBRATION GUIDELINES

### Calibration Criteria

| Criteria and Measures                         | Calibration Acceptance Targets      |
|---|-------------------------------------|
| Hourly Flows, Model Versus Observed           |                                     |
| Individual Link Flows                         |                                     |
| Within 15%, for 700 veh/h < Flow < 2700 veh/h | >85% of cases                       |
| Within 100 veh/h, for Flow < 700 veh/h        | >85% of cases                       |
| Within 400 veh/h, for Flow > 2700 veh/h       | >85% of cases                       |
| Sum of All Link Flows                         | Within 5% of sum of all link counts |
| GEH Statistic < 5 for Individual Link Flows   | >85% of cases                       |
| GEH Statistic for Sum of All Link Flows       | GEH < 4 for sum of all link counts  |
| Travel Times, Model Versus Observed           |                                     |
| Journey Times, Network                        |                                     |
| Within 15% (or 1 min, if higher)              | >85% of cases                       |
| ,g,   |                                     |
| Visual Audits                                 |                                     |
| Individual Link Speeds                        |                                     |
| Visually Acceptable Speed-Flow                | To analyst's satisfaction           |
| Relationship                                  | ,                                   |
| ·   |                                     |
| Bottlenecks                                   |                                     |
| Visually Acceptable Queuing                   | To analyst's satisfaction           |
|   |                                     |

Source: Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software, Publication No. FHWA-HRT-04-040, Federal Highway Administration, July 2004.

ATTACHMENT D LEVEL OF SERVICE CRITERIA

From the Highway Capacity Manual 2000 published by the Transportation Research Board:

### **Signalized Intersections**

| HCS S | TABLE A<br>SIGNALIZED LOS STANDARDS |
|-------|-------------------------------------|
| LOS   | Control Delay per Vehicle (s/veh)   |
| A     | 10 or less                          |
| В     | 10 – 20                             |
| С     | 20 - 35                             |
| D     | 35 – 55                             |
| Е     | 55 - 80                             |
| F     | greater than 80                     |

<sup>\*</sup> s/veh = seconds per vehicle

- **LOS** A describes operations with low control delay, up to 10 s/veh. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
- **LOS B** describes operations with control delay greater than 10 and up to 20 s/veh. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
- **LOS** C describes operations with control delay greater than 20 and up to 35 s/veh. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
- **LOS D** describes operations with control delay greater than 35 and up to 55 s/veh. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity (v/c) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
- **LOS E** describes operations with control delay greater than 55 and up to 80 s/veh. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.
- **LOS** F describes operations with delay in excess of 80.0 s/veh. This level, considered unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels. Often, vehicles do not pass through the intersection in one signal cycle.

### **Unsignalized Intersection Delay**

The level of service criteria for an unsignalized intersection differs from that of a signalized intersection because of the expectation that signalized intersections encounter more traffic and therefore greater delays. The thresholds for the levels of service of unsignalized intersections are as follows:

| TABLE B<br>HCS UNSIGNALIZED LOS STANDARDS |                                   |  |  |  |  |
|---|-----------------------------------|--|--|--|--|
| LOS                                       | Control Delay per Vehicle (s/veh) |  |  |  |  |
| A   | 10 or less                        |  |  |  |  |
| В   | 10 – 15<br>15 - 25                |  |  |  |  |
| С   |                                   |  |  |  |  |
| D   | 25 – 35                           |  |  |  |  |
| Е   | 35 - 50                           |  |  |  |  |
| F   | greater than 50                   |  |  |  |  |

<sup>\*</sup> s/veh = seconds per vehicle

Levels-of-service A, B, and C are considered acceptable, LOS D is generally considered marginally acceptable during peak periods and LOS E and F are considered unacceptable.

### **Freeways**

A basic freeway segment can be characterized by three performance measures: density in terms of passenger cars per mile per lane, speed in terms of mean passenger-car sped and volume-to capacity (v/c) ratio. The measure used to provide an estimate of the LOS is density and are as follows:

| TABLE C<br>HCS FREEWAY LOS STANDARDS |                    |  |  |  |
|--------------------------------------|--------------------|--|--|--|
| LOS                                  | Density (pc/mi/ln) |  |  |  |
| A                                    | 0 – 11             |  |  |  |
| В                                    | 11 – 18            |  |  |  |
| С                                    | 18 – 26            |  |  |  |
| D                                    | 26 – 35            |  |  |  |
| Е                                    | 35 - 45            |  |  |  |
| F                                    | > 45               |  |  |  |

### **Ramps and Ramp Junctions**

| TABLE D<br>HCS MERGE AND DIVERGE AREA LOS STANDARDS |                         |  |  |  |
|---|-------------------------|--|--|--|
| LOS   | Density (pc/mi/ln)      |  |  |  |
| A   | 10 or less              |  |  |  |
| В   | 10 – 20                 |  |  |  |
| С   | 20 - 28                 |  |  |  |
| D   | 28 – 35                 |  |  |  |
| Е   | Greater than 35         |  |  |  |
| F   | Demand exceeds capacity |  |  |  |

LOS in merge (and diverge) influence areas is determined by density for all cases of stable operation, represented by LOS A through E. LOS F exists when the total flow departing from the merge area exceeds the capacity of the downstream freeway segment.

LOS A represents unrestricted operations. Density is low enough to permit smooth merging and diverging, with virtually no turbulence in the traffic stream.

LOS B, merging and diverging maneuvers become noticeable to through drivers, and minimal turbulence occurs. Merging drivers must adjust speeds to accomplish smooth transitions from the acceleration lane to the freeway.

LOS C, speed within the influence area begins to decline as turbulence levels become noticeable. Both ramp and freeway vehicles begin to adjust their speeds to accomplish smooth transitions.

LOS D, turbulence levels in the influence area become intrusive, and virtually all vehicles slow to accommodate merging and diverging. Some ramp queues may form at heavily used on-ramps, but freeway operations remains stable.

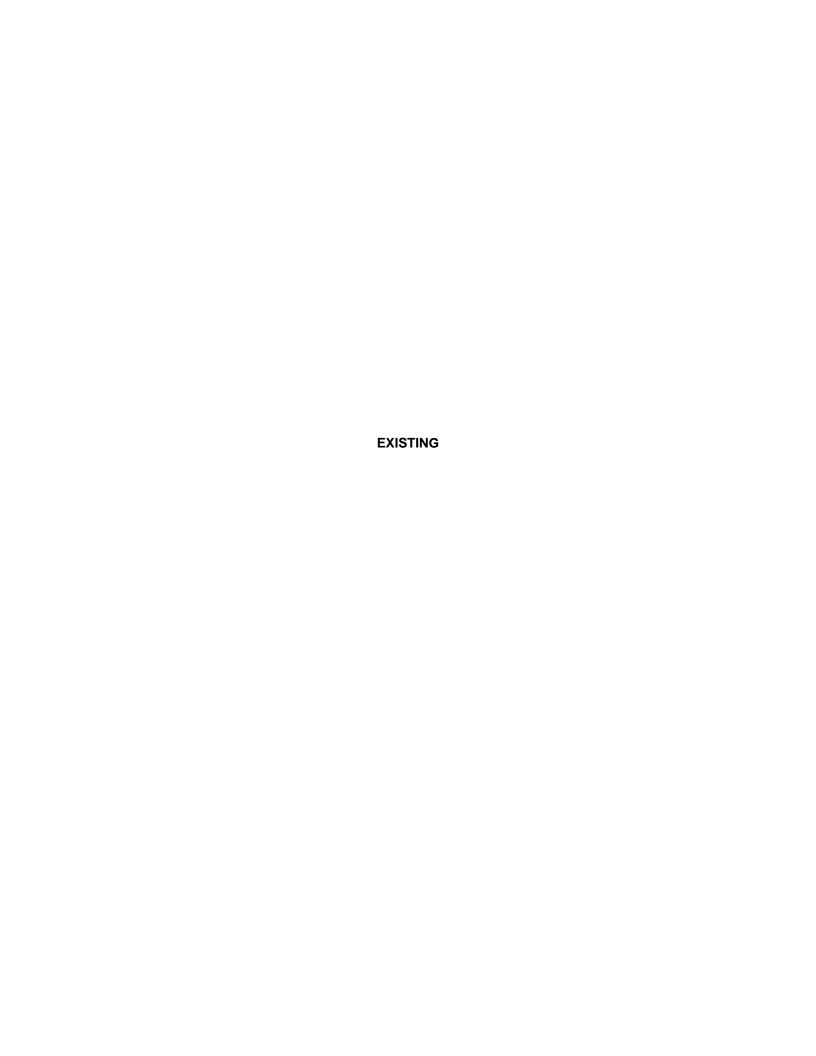
LOS E represents conditions approaching capacity.

### **Weaving Segments**

A single LOS is used to characterize total flow in the weaving segment, although it is recognized that in some situations (particularly in cases of constrained operations) nonweaving vehicles may achieve higher-quality operations than weaving vehicles.

| TABLE E<br>HCS WEAVE LOS STANDARDS |                    |  |  |  |  |
|------------------------------------|--------------------|--|--|--|--|
| LOS                                | Density (pc/mi/ln) |  |  |  |  |
| A                                  | 10 or less         |  |  |  |  |
| В                                  | 10 – 20            |  |  |  |  |
| С                                  | 20 - 28            |  |  |  |  |
| D                                  | 28 – 35            |  |  |  |  |
| Е                                  | 35 – 43            |  |  |  |  |
| F                                  | F Greater than 43  |  |  |  |  |

# ATTACHMENT E LEVEL OF SERVICE WORKSHEETS



| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>b</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>n</sub> | N, S, D               |
| Design (v <sub>D</sub> )   | FFS, LOS, N              | v <sub>p</sub> , S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N. S. D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> . S, D |

|  | now rose therms     | 117                                     |  |                   |                                |
|--|---------------------|---|--|-------------------|--------------------------------|
| General Information                              |                     |   | Site Information                             |                   |                                |
| Analyst  | SEB                 |   | Highway/Direction of Travel                  | Northbo           | ound I-87                      |
| Agency or Company                                | CHA                 |   | From/To                                      | Exit 2 to         | Exit 4                         |
| Date Performed                                   | 9/08/2011           |   | Jurisdiction                                 | NYSDC             |                                |
| Analysis Time Period                             | AM                  |   | Analysis Year                                | 2009 - E          | Existing                       |
| Project Description Exit 4                       |                     |   |  |                   |                                |
| Oper.(LOS)                                       |                     | 7.1                                     | Des.(N)                                      | □ Pla             | anning Data                    |
| Flow Inputs                                      |                     |   |  |                   |                                |
| Volume, V<br>AADT                                | 3000                | veh/h                                   | Peak-Hour Factor, PHF                        | 0.92              |                                |
|  |                     | veh/day                                 | %Trucks and Buses, P <sub>T</sub>            | 2                 | *                              |
| Peak-Hr Prop. of AADT, K                         |                     |   | %RVs, P <sub>R</sub>                         | 0                 |                                |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D |                     | and to the                              | General Terrain:                             | Level             |                                |
| Driver type adjustment                           | 1.00                | veh/h                                   | Grade % Length                               | mi                |                                |
| Calculate Flow Adjustr                           |                     |   | Up/Down %                                    |                   |                                |
|  |                     |   |  |                   |                                |
| f <sub>p</sub>                                   | 1.00                |   | $E_R$  | 1.2               |                                |
| E <sub>T</sub>                                   | 1.5                 |   | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990             |                                |
| Speed Inputs                                     |                     |   | Calc Speed Adj and FF                        | S                 |                                |
| Lane Width                                       | 12.0                | ft                                      | $f_LW$                                       |                   | mi/h                           |
| Rt-Shoulder Lat. Clearance                       | 6.0                 | ft                                      | i i  |                   |                                |
| Interchange Density                              | 0.50                | l/mi                                    | f <sub>LC</sub>                              |                   | mi/h                           |
| Number of Lanes, N                               | 3                   |   | f <sub>ID</sub>                              |                   | mi/h                           |
| FFS (measured)                                   | 56.0                | mi/h                                    | f <sub>N</sub>                               |                   | mi/h                           |
| Base free-flow Speed, BFFS                       |                     | mi/h                                    | FFS  | 56.0              | mi/h                           |
| LOS and Performance                              |                     | 111771                                  | Design (N)                                   | -                 |                                |
|  |                     |   | Design (N)                                   |                   |                                |
| Operational (LOS)                                |                     |   |  |                   |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$          | x f <sub>HV</sub> x | n n                                     | Design LOS                                   | _                 |                                |
| f <sub>p</sub> )                                 | 1098                | pc/h/ln                                 | $v_p = (V \text{ or DDHV}) / (PHF x N x)$    | t <sub>HV</sub> x | pc/h                           |
| S  | 56.0                | mi/h                                    | f <sub>p</sub> )                             |                   | pom                            |
| $D = v_p / S$                                    | 19.6                | pc/mi/ln                                | S  |                   | mi/h                           |
| LOS  | 79.0<br>C           | ροπιπ                                   | D = v <sub>p</sub> / S                       |                   | pc/mi/ln                       |
| -00  | C                   |   | Required Number of Lanes, N                  |                   | •                              |
| Glossary   |                     | *************************************** | Factor Location                              |                   |                                |
| N - Number of lanes                              | S - Speed           |   |  |                   |                                |
| √ - Hourly volume                                | D - Density         |   | E <sub>R</sub> - Exhibits23-8, 23-10         |                   | f <sub>LW</sub> - Exhibit 23-4 |
| , - Flow rate                                    | FFS - Free-flow     | sneed                                   | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1  | 1                 | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                            |                     | ·                                       | f <sub>p</sub> - Page 23-12                  |                   | f <sub>N</sub> - Exhibit 23-6  |
|  | BFFS - Base fre     | ee-now speed                            | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-2  | 2, 23-3           | f <sub>ID</sub> - Exhibit 23-7 |
| DDHV - Directional design ho                     | ur volume           |   | <b>_</b>                                     |                   | יטו                            |

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# **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mi/h) Froe-Flow Speed FFS = <u>75 mith</u> 70 mith 70 65 miih 60 mids 60 55 milh 50 30 0 400 0081200 1600 2000 2400 Flow Rate (nc/h/lin)

| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>o</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, V <sub>n</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> , S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>n</sub> , S, D |

|  | Flow Rate (pc/h/l                                    | n)               |  |                     |   |
|--|--|------------------|--|---------------------|---|
| General Information  |  |                  | Site Information   |                     |   |
| Analyst Agency or Company Date Performed   | SEB<br>CHA   |                  | Highway/Direction of Travel From/To Jurisdiction   | Exit 4 to<br>NYSDO  | T   |
| Analysis Time Period Project Description Exit 4  | AM   |                  | Analysis Year  | 2009 - E            | existing  |
| Froject Description Exit 4  ☐ Oper.(LOS)   |  | F-12-1           | D - /N   | ş                   |   |
| Flow Inputs  |  | <b>\$</b> 0.55.  | Des.(N)  | III Pla             | anning Data   |
| Volume, V<br>AADT  | 5150   | veh/h<br>veh/day | Peak-Hour Factor, PHF<br>%Trucks and Buses, P <sub>T</sub>   | 0.92<br>2           |   |
| Peak-Hr Prop. of AADT, K<br>Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D<br>Driver type adjustment | 1.00   | veh/h            | %RVs, P <sub>R</sub><br>General Terrain:<br>Grade % Length<br>Up/Down %  | 0<br>Level<br>mi    |   |
| Calculate Flow Adjustr   | nents  |                  |  |                     |   |
| f <sub>p</sub>   | 1.00   |                  | E <sub>R</sub>   | 1.2                 |   |
| E <sub>T</sub>   | 1.5  |                  | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$   | 0.990               |   |
| Speed Inputs   |  |                  | Calc Speed Adj and FF  | S                   |   |
| Lane Width   | 12.0   | ft               | f <sub>LW</sub>  |                     | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft               |  |                     |   |
| Interchange Density  | 0.50   | I/mi             | f <sub>LC</sub>  |                     | mi/h  |
| Number of Lanes, N   | 3  |                  | f <sub>ID</sub>  |                     | mi/h  |
| FFS (measured)   | 56.0   | mi/h             | f <sub>N</sub>   |                     | mi/h  |
| Base free-flow Speed, BFFS   |  | mi/h             | FFS  | 56.0                | mi/h  |
| LOS and Performance  | Measures   |                  | Design (N)   |                     |   |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N x   | x f.n. x   |                  | Design (N)<br>Design LOS   |                     |   |
| f <sub>p</sub> )   | 1885   | pc/h/ln          | $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_p)$  | : f <sub>HV</sub> x | pc/h  |
|  | <i>55.7</i>  | mi/h             | s  |                     | mi/h  |
| D = v <sub>p</sub> / S<br>LOS  | 33.8<br>D  | pc/mi/ln         | $D = v_p / S$  |                     | pc/mi/ln  |
| LOS  | D  |                  | Required Number of Lanes, N  |                     |   |
| Glossary   |  |                  | Factor Location  |                     |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service                | S - Speed D - Density FFS - Free-flow BFFS - Base fr |                  | E <sub>R</sub> - Exhibits23-8, 23-10<br>E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1<br>f <sub>p</sub> - Page 23-12 | 1                   | f <sub>LW</sub> - Exhibit 23-4<br>f <sub>LC</sub> - Exhibit 23-5<br>f <sub>N</sub> - Exhibit 23-6 |
| DDHV - Directional design ho   |  | - F              | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | 2, 23-3             | f <sub>ID</sub> - Exhibit 23-7  |

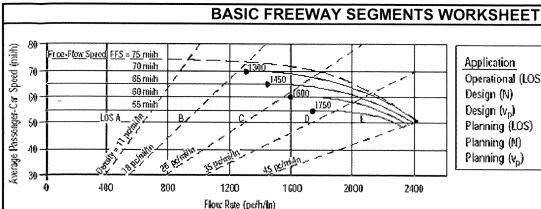
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| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>B</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>n</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> , S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>n</sub> , S, D |

|   | Flow Rate (pc/h/l                  | n)           |   |                    |                                |
|---|------------------------------------|--------------|---|--------------------|--------------------------------|
| General Information                           | <u> </u>                           |              | Site Information                                      |                    |                                |
| Analyst                                       | SEB                                |              | Highway/Direction of Travel                           |                    | ound I-87                      |
| Agency or Company                             | CHA                                |              | From/To   |                    | ff to Exit 4 on                |
| Date Performed<br>Analysis Time Period        | 9/08/2011<br>AM                    |              | Jurisdiction  | NYSDC              |                                |
| Project Description Exit 4                    | AM                                 |              | Analysis Year   | 2009 - E           | =xisting                       |
| Oper.(LOS)                                    |                                    | fin r        | Des.(N)   | □ PI               | anning Data                    |
| Flow Inputs                                   |                                    |              |   | * 1 K              | anning Data                    |
| Volume, V                                     | 2200                               | veh/h        | Peak-Hour Factor, PHF                                 | 0.92               |                                |
| AADT  |                                    | veh/day      | %Trucks and Buses, P <sub>T</sub>                     | 2                  |                                |
| Peak-Hr Prop. of AADT, K                      |                                    |              | %RVs, P <sub>R</sub>                                  | 0                  |                                |
| Peak-Hr Direction Prop, D                     |                                    |              | General Terrain:                                      | Level              |                                |
| DDHV = AADT x K x D                           | 4.00                               | veh/h        | Grade % Length  | mi                 |                                |
| Driver type adjustment Calculate Flow Adjustr | 1.00                               |              | Up/Down %   |                    |                                |
|   | 1.00                               |              | E <sub>R</sub>  | 1.2                |                                |
| f <sub>p</sub>                                |                                    |              | -   |                    |                                |
| E <sub>T</sub>                                | 1.5                                |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$          | 0.990              |                                |
| Speed Inputs                                  |                                    |              | Calc Speed Adj and FF                                 | <u>S</u>           |                                |
| Lane Width                                    | 12.0                               | ft           | $f_{LW}$  |                    | mi/h                           |
| Rt-Shoulder Lat. Clearance                    | 6.0                                | ft           | f <sub>LC</sub>                                       |                    | mi/h                           |
| Interchange Density                           | 0.50                               | l/mi         |   |                    | mi/h                           |
| Number of Lanes, N                            | 3                                  |              | f <sub>ID</sub>                                       |                    |                                |
| FFS (measured)                                | 56.0                               | mi/h         | f <sub>N</sub>  |                    | mi/h                           |
| Base free-flow Speed, BFFS                    |                                    | mi/h         | FFS   | 56.0               | mi/h                           |
| LOS and Performance                           | Measures                           |              | Design (N)  |                    |                                |
| Operational (LOS)                             |                                    |              | Design (N)  |                    |                                |
|   | w.f. w                             |              | Design LOS  |                    |                                |
| v <sub>p</sub> = (V or DDHV) / (PHF x N x     | <sup>X 1</sup> HV <sup>X</sup> 805 | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF \times N \times N)$ | cf <sub>HV</sub> x |                                |
| f <sub>p</sub> )                              |                                    |              | $f_{\rho}$ )  |                    | pc/h                           |
| S   | 56.0                               | mi/h         | S   |                    | mi/h                           |
| $D = v_p / S$                                 | 14.4                               | pc/mi/ln     | $D = v_p / S$   |                    | pc/mi/ln                       |
| LOS   | В                                  |              | Required Number of Lanes, N                           | l                  | родини                         |
| Glossary                                      |                                    |              | Factor Location                                       |                    |                                |
| N - Number of lanes                           | S - Speed                          |              |   |                    |                                |
| V - Hourly volume                             | D - Density                        |              | E <sub>R</sub> - Exhibits23-8, 23-10                  |                    | f <sub>LW</sub> - Exhibit 23-4 |
| v <sub>o</sub> - Flow rate                    | FFS - Free-flov                    | v speed      | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1           | 11                 | f <sub>LC</sub> - Exhibit 23-5 |
| LOS - Level of service                        | BFFS - Base fr                     | ·            | f <sub>p</sub> - Page 23-12                           |                    | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho                  |                                    | oo non opeca | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-            | 2, 23-3            | f <sub>ID</sub> - Exhibit 23-7 |
| Julia - Directional design 10                 | ui voiuiile                        |              | · ·   |                    |                                |

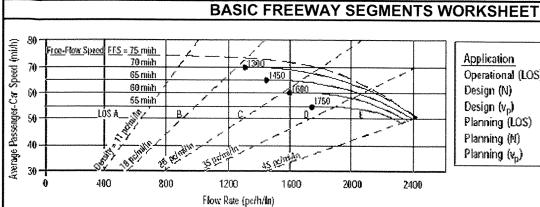
| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>B</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> , S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>o</sub> , S, D |

|   | How Kate (pc/h/li           | n)           |  |                    |                                |
|---|-----------------------------|--------------|--|--------------------|--------------------------------|
| General Information                           |                             |              | Site Information                             |                    |                                |
| Analyst                                       | SEB                         |              | Highway/Direction of Travel                  | Southbo            | ound I-87                      |
| Agency or Company                             | CHA                         |              | From/To                                      | Exit 5 o           | n to Exit 4 on                 |
| Date Performed                                | 12/08/2011                  |              | Jurisdiction                                 | NYSDO              | T                              |
| Analysis Time Period                          | AM                          |              | Analysis Year                                | 2009 - E           | Existing                       |
| Project Description Exit 4                    |                             |              |  |                    |                                |
| Oper.(LOS)                                    |                             |              | Des.(N)                                      | □ Pla              | anning Data                    |
| Flow Inputs                                   |                             |              |  |                    |                                |
| Volume, V                                     | 4600                        | veh/h        | Peak-Hour Factor, PHF                        | 0.92               |                                |
| AADT  |                             | veh/day      | %Trucks and Buses, $P_T$                     | 2                  |                                |
| Peak-Hr Prop. of AADT, K                      |                             |              | %RVs, P <sub>R</sub>                         | 0                  |                                |
| Peak-Hr Direction Prop, D                     |                             |              | General Terrain:                             | Level              |                                |
| DDHV = AADT x K x D                           | 1.00                        | veh/h        | Grade % Length                               | mi                 |                                |
| Driver type adjustment Calculate Flow Adjustr | 1.00                        |              | Up/Down %                                    |                    |                                |
|   | 1.00                        |              | · ·  |                    |                                |
| f <sub>p</sub>                                |                             |              | E <sub>R</sub>                               | 1.2                |                                |
| E <sub>T</sub>                                | 1.5                         |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990              |                                |
| Speed Inputs                                  |                             |              | Calc Speed Adj and FF                        | S                  |                                |
| Lane Width                                    | 12.0                        | ft           | $f_LW$                                       |                    | mi/h                           |
| Rt-Shoulder Lat. Clearance                    | 6.0                         | ft           |  |                    |                                |
| Interchange Density                           | 0.50                        | l/mi         | f <sub>LC</sub>                              |                    | mi/h                           |
| Number of Lanes, N                            | 3                           |              | f <sub>ID</sub>                              |                    | mi/h                           |
| FFS (measured)                                | 56.0                        | mi/h         | f <sub>N</sub>                               |                    | mi/h                           |
| Base free-flow Speed, BFFS                    |                             | mi/h         | FFS  | 56.0               | mi/h                           |
| LOS and Performance                           |                             |              | Design (N)                                   |                    |                                |
|   |                             |              | Design (N)                                   | <b></b>            |                                |
| Operational (LOS)                             |                             |              | Design LOS                                   |                    |                                |
| v <sub>p</sub> = (V or DDHV) / (PHF x N :     | x f <sub>HV</sub> x<br>1683 | n o /h /l n  |  |                    |                                |
| f <sub>p</sub> )                              | 1003                        | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF x N)$      | CI <sub>HV</sub> X | pc/h                           |
| S   | 56.0                        | mi/h         | f <sub>p</sub> )                             |                    | ·                              |
| $D = v_p / S$                                 | 30.1                        | pc/mi/ln     | S  |                    | mi/h                           |
| LOS   | D                           | pommi        | D = v <sub>p</sub> / S                       |                    | pc/mi/ln                       |
|   |                             |              | Required Number of Lanes, N                  | I                  |                                |
| Glossary                                      |                             |              | Factor Location                              |                    |                                |
| N - Number of lanes                           | S - Speed                   |              | E  |                    | f F12200                       |
| V - Hourly volume                             | D - Density                 |              | E <sub>R</sub> - Exhibits23-8, 23-10         |                    | f <sub>LW</sub> - Exhibit 23-4 |
| v <sub>o</sub> - Flow rate                    | FFS - Free-flow             | v speed      | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-2  | 11                 | f <sub>LC</sub> - Exhibit 23-5 |
| LOS - Level of service                        | BFFS - Base from            |              | f <sub>p</sub> - Page 23-12                  |                    | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho                  |                             | oo now speed | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | -2, 23-3           | f <sub>ID</sub> - Exhibit 23-7 |
|   | our volume                  |              |  |                    |                                |



| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N. S. D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | V <sub>D</sub> , S, D |

|   | Flow Rate (pc/h/l | n)           |   |                   |                                |
|---|-------------------|--------------|---|-------------------|--------------------------------|
| General Information                     |                   |              | Site Information                                      |                   |                                |
| Analyst                                 | SEB               |              | Highway/Direction of Travel                           | Northbo           | ound I-87                      |
| Agency or Company                       | CHA               |              | From/To   | Exit 4 to         | Exit 5                         |
| Date Performed                          | 9/08/2011         |              | Jurisdiction  | NYSDC             | )T                             |
| Analysis Time Period                    | AM                |              | Analysis Year   | 2009 - L          | Existing                       |
| Project Description Exit 4              |                   |              |   |                   |                                |
| ✓ Oper.(LOS) <b>Flow Inputs</b>         |                   |              | Des.(N)   | □ Pla             | anning Data                    |
| Volume, V                               | 2700              | veh/h        | Peak-Hour Factor, PHF                                 | 0.92              |                                |
| AADT                                    | 2700              | veh/day      | %Trucks and Buses, P <sub>T</sub>                     | 2                 |                                |
| Peak-Hr Prop. of AADT, K                |                   | voinady      | %RVs, P <sub>R</sub>                                  | 0                 |                                |
| Peak-Hr Direction Prop, D               |                   |              | General Terrain:                                      | Level             |                                |
| DDHV = AADT x K x D                     |                   | veh/h        | Grade % Length  | mi                |                                |
| Driver type adjustment                  | 1.00              | ·            | Up/Down %   |                   |                                |
| Calculate Flow Adjustr                  | nents             |              |   |                   |                                |
| f <sub>p</sub>                          | 1.00              |              | $E_R$   | 1.2               |                                |
| E <sub>T</sub>                          | 1.5               |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$          | 0.990             |                                |
| Speed Inputs                            |                   |              | Calc Speed Adj and FF                                 | S                 |                                |
| _ane Width                              | 12.0              | ft           | $f_{LW}$  |                   | mi/h                           |
| Rt-Shoulder Lat. Clearance              | 6.0               | ft           | f <sub>LC</sub>                                       |                   | mi/h                           |
| nterchange Density                      | 0.50              | I/mi         |   |                   |                                |
| Number of Lanes, N                      | 3                 |              | f <sub>ID</sub>                                       |                   | mi/h                           |
| FFS (measured)                          | 56.0              | mi/h         | f <sub>N</sub>  |                   | mi/h                           |
| Base free-flow Speed, BFFS              |                   | mi/h         | FFS   | 56.0              | mi/h                           |
| LOS and Performance                     | Measures          |              | Design (N)  |                   |                                |
| Operational (LOS)                       |                   |              | Design (N)  |                   |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$ | vf v              |              | Design LOS  |                   |                                |
| •                                       | ^ 'HV ^ 988       | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF \times N \times N)$ | f <sub>HV</sub> x |                                |
| (p)                                     |                   |              | $f_p$ )   |                   | pc/h                           |
| S                                       | 56.0              | mi/h         | S   |                   | mi/h                           |
| $D = v_p / S$                           | 17.6              | pc/mi/ln     | $D = v_p / S$   |                   | pc/mi/ln                       |
| _OS                                     | В                 |              | Required Number of Lanes, N                           |                   | ρο/ιτι/π                       |
| Glossary                                |                   |              | Factor Location                                       |                   |                                |
| N - Number of lanes                     | S - Speed         |              |   |                   |                                |
| √ - Hourly volume                       | D - Density       |              | E <sub>R</sub> - Exhibits23-8, 23-10                  |                   | f <sub>LW</sub> - Exhibit 23-4 |
| - Flow rate                             | FFS - Free-flow   | / speed      | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1           | 1                 | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                   | BFFS - Base fr    |              | f <sub>p</sub> - Page 23-12                           |                   | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho            |                   | ee-now speed | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-            | 2, 23-3           | f <sub>ID</sub> - Exhibit 23-7 |
|   | ui voiullie       |              | r.  |                   | ***                            |



| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (N)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | V <sub>B</sub> , S, D |

|  | Filow Rate (po                      | /h/ <b>l</b> n) |  |                     |                                |
|--|-------------------------------------|-----------------|--|---------------------|--------------------------------|
| General Information                              |                                     |                 | Site Information                             |                     |                                |
| Analyst  | SEB                                 |                 | Highway/Direction of Travel                  | Southb              | ound I-87                      |
| Agency or Company                                | CHA                                 |                 | From/To                                      | Exit 5 to           | o Exit 4                       |
| Date Performed                                   | 9/08/2011                           |                 | Jurisdiction                                 | NYSDC               | DΤ                             |
| Analysis Time Period                             | AM                                  |                 | Analysis Year                                | 2009 - 1            | Existing                       |
| Project Description Exit 4                       |                                     |                 |  |                     |                                |
| Oper.(LOS)                                       | )                                   |                 | Des.(N)                                      | □ PI                | anning Data                    |
| Flow Inputs                                      |                                     |                 |  |                     |                                |
| Volume, V  | 4400                                | veh/h           | Peak-Hour Factor, PHF                        | 0.92                |                                |
| AADT   |                                     | veh/day         | %Trucks and Buses, P <sub>T</sub>            | 2                   |                                |
| Peak-Hr Prop. of AADT, K                         |                                     |                 | %RVs, P <sub>R</sub>                         | 0                   |                                |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D |                                     | In <i>I</i> In  | General Terrain:                             | Level               |                                |
| Driver type adjustment                           | 1.00                                | veh/h           | Grade % Length<br>Up/Down %                  | mi                  |                                |
| Calculate Flow Adjusti                           |                                     |                 | Op/Down 78                                   |                     |                                |
| f <sub>p</sub>                                   | 1.00                                |                 | E <sub>R</sub>                               | 1.2                 |                                |
| E <sub>T</sub>                                   | 1.5                                 |                 | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990               |                                |
| Speed Inputs                                     | 7.0                                 |                 | Calc Speed Adj and FF                        |                     |                                |
| Lane Width                                       | 12.0                                | ft              |  | <u> </u>            |                                |
| Rt-Shoulder Lat. Clearance                       | 6.0                                 | ft              | $f_{LW}$                                     |                     | mi/h                           |
| Interchange Density                              | 0.50                                | l/mi            | f <sub>LC</sub>                              |                     | mi/h                           |
| Number of Lanes, N                               | 3                                   | 1/1111          | f <sub>ID</sub>                              |                     | mi/h                           |
| FFS (measured)                                   | 56.0                                | mi/h            | f <sub>N</sub>                               |                     | mi/h                           |
| Base free-flow Speed, BFFS                       |                                     | mi/h            | FFS  | 56.0                | mi/h                           |
| LOS and Performance                              |                                     | 111/11          | Dooign (N)                                   |                     |                                |
| LOS and Performance                              | Measures                            |                 | Design (N)                                   |                     |                                |
| Operational (LOS)                                |                                     |                 | Design (N)                                   |                     |                                |
| $v_p = (V \text{ or DDHV}) / (PHF \times N)$     | x f <sub>HV</sub> x                 |                 | Design LOS                                   |                     |                                |
| (p)  | 1610                                | pc/h/ln         | $V_p = (V \text{ or DDHV}) / (PHF \times N)$ | x f <sub>HV</sub> x | pc/h                           |
| p <sup>,</sup>                                   | 56.0                                | mi/h            | f <sub>p</sub> )                             |                     | ролі                           |
| ) = v <sub>p</sub> / S                           | 28.8                                | pc/mi/ln        | S  |                     | mi/h                           |
| _OS  | 20.0<br>D                           | pc/m/m          | D = v <sub>p</sub> / S                       |                     | pc/mi/ln                       |
|  | <i>U</i>                            |                 | Required Number of Lanes, N                  | ١                   |                                |
| Glossary   |                                     |                 | Factor Location                              |                     |                                |
| N - Number of lanes                              | S - Speed                           |                 | E Evhibite02.0.00.40                         |                     | f F. 1. 1. 1. 2. 0. 1          |
| √ - Hourly volume                                | D - Density                         |                 | E <sub>R</sub> - Exhibits23-8, 23-10         |                     | f <sub>LW</sub> - Exhibit 23-4 |
| /p - Flow rate                                   | FFS - Free-flo                      | ow speed        | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-   | 11                  | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                            |                                     | free-flow speed | f <sub>p</sub> - Page 23-12                  |                     | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho                     |                                     |                 | LOS, S, FFS, v <sub>p</sub> - Exhibits 23    | -2, 23-3            | f <sub>ID</sub> - Exhibit 23-7 |
|  | · • · · · · · · · · · · · · · · · · |                 |  |                     |                                |

# **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenges-Car Speed (mith) Free-Flow Speed FFS = <u>75</u> mith 70 mith 70 65 miih 60 mids 60 55 milh 40 400 200 1200 1600 2000 2400 Flow Rate (nc/h/ln)

| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> , S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (N)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> , S, D |

|  | Flow Rate (pc/h/i          | in)  |   |                     |                                |
|--|----------------------------|--|---|---------------------|--------------------------------|
| General Information                              |                            | ***************************************  | Site Information                                      |                     |                                |
| Analyst  | SEB                        |  | Highway/Direction of Travel                           | Northbo             | ound I-87                      |
| Agency or Company                                | CHA                        |  | From/To   | Exit 5 to           | Exit 6                         |
| Date Performed                                   | 9/08/2011                  |  | Jurisdiction  | NYSDO               | )T                             |
| Analysis Time Period                             | AM                         |  | Analysis Year   | 2009 - E            | Existing                       |
| Project Description Exit 4                       |                            |  |   |                     |                                |
| ✓ Oper.(LOS)                                     |                            | \$ 100 to | Des.(N)   | □ Pla               | anning Data                    |
| Flow Inputs                                      | 0500                       |  |   |                     |                                |
| Volume, V<br>AADT                                | 2500                       | veh/h  | Peak-Hour Factor, PHF                                 | 0.92                |                                |
|  |                            | veh/day  | %Trucks and Buses, P <sub>T</sub>                     | 2                   |                                |
| Peak-Hr Prop. of AADT, K                         |                            |  | %RVs, P <sub>R</sub>                                  | 0                   |                                |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D |                            | veh/h  | General Terrain:<br>Grade % Length                    | Level<br>mi         |                                |
| Driver type adjustment                           | 1.00                       | VC(1//1)   | Grade % Length<br>Up/Down %                           | mi                  |                                |
| Calculate Flow Adjustr                           |                            |  | Op/DOWN 78  |                     |                                |
| fp   | 1.00                       |  | E <sub>R</sub>  | 1.2                 |                                |
| E <sub>T</sub>                                   | 1.5                        |  | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$          | 0.990               |                                |
| Speed Inputs                                     |                            |  | Calc Speed Adj and FF                                 | S                   |                                |
| Lane Width                                       | 12.0                       | ft   | f <sub>LW</sub>                                       |                     | mi/h                           |
| Rt-Shoulder Lat. Clearance                       | 6.0                        | ft   |   |                     |                                |
| Interchange Density                              | 0.50                       | I/mi   | f <sub>LC</sub>                                       |                     | mi/h                           |
| Number of Lanes, N                               | 4                          |  | f <sub>ID</sub>                                       |                     | mi/h                           |
| FFS (measured)                                   | 56.0                       | mi/h   | f <sub>N</sub>  |                     | mi/h                           |
| Base free-flow Speed, BFFS                       |                            | mi/h   | FFS   | 56.0                | mi/h                           |
| LOS and Performance                              | Measures                   |  | Design (N)  |                     |                                |
| Operational (LOS)                                |                            |  | Design (N)  |                     |                                |
| Operational (LOS)                                | <b>r</b>                   |  | Design LOS  |                     |                                |
| $v_p = (V \text{ or DDHV}) / (PHF \times N)$     | х т <sub>НV</sub> х<br>686 | pc/h/ln  | $v_p = (V \text{ or DDHV}) / (PHF \times N)$          | x f <sub>uv</sub> x |                                |
| f <sub>p</sub> )                                 |                            | •  | $f_p$ )   | + 1 V               | pc/h                           |
| S  | 56.0                       | mi/h   | C   |                     | mi/h                           |
| $D = v_p / S$                                    | 12.3                       | pc/mi/ln   | 5<br>D=v /S   |                     |                                |
| LOS  | В                          |  | D = v <sub>p</sub> / S<br>Required Number of Lanes, N | ı                   | pc/mi/ln                       |
| Glossary   |                            |  | Factor Location                                       | ·                   |                                |
| N - Number of lanes                              | S - Speed                  |  | p actor Location                                      |                     |                                |
| V - Hourly volume                                | D - Density                |  | E <sub>R</sub> - Exhibits23-8, 23-10                  |                     | f <sub>LW</sub> - Exhibit 23-4 |
| •  | •                          | w spood  | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-            | 11                  | f <sub>LC</sub> - Exhibit 23-5 |
| v <sub>p</sub> - Flow rate                       | FFS - Free-flow            |  | f <sub>n</sub> - Page 23-12                           |                     | f <sub>N</sub> - Exhibit 23-6  |
| LOS - Level of service                           | BFFS - Base fi             | ree-flow speed   | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-            | -2. 23-3            | f <sub>ID</sub> - Exhibit 23-7 |
| DDHV - Directional design ho                     | ur volume                  |  | р   | _, 🗸                | -iD::::01.20 /                 |

## **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mith) Free-Flow Speed FFS = 75 mish Application Input Output 70 mish 70 Operational (LOS) FFS, N, vp LOS, S, D 65 mith 60 miih Design (N) FFS, LOS, v<sub>n</sub> N, S, D 60 55 min Design (v<sub>n</sub>) FFS, LOS, N Vp. S. D 50 Planning (LOS) FFS, N, AADT LOS, S, D Planning (N) FFS, LOS, AADT N, S, D 40 Planning (v<sub>n</sub>) FFS, LOS, N v<sub>p</sub>, S, D 1200 1600 2000 2400 Flow Rate (pc/h/lin) General Information Site Information Analyst SEB Highway/Direction of Travel Southbound I-87 Agency or Company From/To CHA Exit 6 to Exit 5 Date Performed 9/08/2011 Jurisdiction NYSDOT Analysis Time Period Analysis Year 2009 - Existing AM Project Description Exit 4 ☐ Des.(N) □ Planning Data Flow Inputs Volume, V 6100 Peak-Hour Factor, PHF 0.92 veh/h %Trucks and Buses, $P_T$ AADT veh/day 2 %RVs, P<sub>R</sub> Peak-Hr Prop. of AADT, K 0 Peak-Hr Direction Prop, D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments 1.00 $E_R$ 1.2 $E_{T}$ 1.5 0.990 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Speed Inputs Calc Speed Adj and FFS Lane Width 12.0 ft $f_{LW}$ mi/h Rt-Shoulder Lat. Clearance 6.0 ft $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h Number of Lanes. N 4 $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 1674 $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ pc/h/ln $f_p)$ pc/h 56.0 mi/h mi/h D = v<sub>p</sub> / S 29.9 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS D Required Number of Lanes, N Glossary **Factor Location** N - Number of lanes S - Speed E<sub>B</sub> - Exhibits23-8, 23-10 f<sub>IW</sub> - Exhibit 23-4

DDHV - Directional design hour volume

D - Density

FFS - Free-flow speed

BFFS - Base free-flow speed

V - Hourly volume

LOS - Level of service

- Flow rate

E<sub>T</sub> - Exhibits 23-8, 23-10, 23-11

LOS, S, FFS, v<sub>p</sub> - Exhibits 23-2, 23-3

f<sub>p</sub> - Page 23-12

f<sub>LC</sub> - Exhibit 23-5

f<sub>N</sub> - Exhibit 23-6

f<sub>ID</sub> - Exhibit 23-7

|   | RA                                   | MPS AND                                   | VAINL JOIM             | STICING W                    | OKKSHE  | <u> </u>                           |                                      |                                   |                                      |  |  |  |
|---|--------------------------------------|---|------------------------|------------------------------|---|------------------------------------|--------------------------------------|-----------------------------------|--------------------------------------|--|--|--|
| General Infort  | mation                               |   |                        | Site Infor                   | mation  |                                    |                                      |                                   |                                      |  |  |  |
| Analyst   | SEB                                  |   | Fre                    | eeway/Dir of Tra             | avel i  | Northbound I-8                     | 7                                    |                                   |                                      |  |  |  |
| agency or Company   | CHA                                  |   | Ju                     | nction                       | 1   | Exit 2W On-Ra                      | mp                                   |                                   |                                      |  |  |  |
| Date Performed  | 9/08/                                |   | Ju                     | risdiction                   | ļ   | NYSDOT                             | •                                    |                                   |                                      |  |  |  |
| nalysis Time Period   | AM                                   |   | An                     | alysis Year                  | :   | 2009 Existing                      |                                      |                                   |                                      |  |  |  |
| Project Description   | Exit 4                               |   |                        |                              |   | _                                  |                                      |                                   |                                      |  |  |  |
| nputs   |                                      |   |                        |                              |   |                                    |                                      |                                   |                                      |  |  |  |
| lpstream Adj Ramp   |                                      | Terrain: Level                            |                        |                              |   |                                    |                                      | Downstre<br>Ramp                  | eam Adj                              |  |  |  |
| ▼ Yes ☐ On  |                                      |   |                        |                              |   |                                    |                                      | ☐ Yes                             | □ On                                 |  |  |  |
| □ No     Off  |                                      |   |                        |                              |   |                                    |                                      | ☑ No                              | ☐ Off                                |  |  |  |
| <sub>rup</sub> = 1100 1   | ft                                   |   |                        |                              |   |                                    |                                      | L <sub>down</sub> =               | ft                                   |  |  |  |
|   |                                      | S   | $_{\rm F}$ = 56.0 mph  |                              | $S_{FR} = 4$                                    | 0.0 mph                            |                                      | \/ <b>-</b>                       | veh/h                                |  |  |  |
| u' = 690  ve  | eh/h                                 |   | Sketch (s              | show lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$                             |                                    |                                      | $V_D =$                           | ven/m                                |  |  |  |
| Conversion to   | pc/h Un                              | der Base C                                | onditions              |                              |   |                                    |                                      |                                   |                                      |  |  |  |
| (pc/h)  | V<br>(Veh/hr)                        | PHF                                       | Terrain                | %Truck                       | %Rv   | f <sub>HV</sub>                    | fp                                   | v = V/PH                          | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |  |
| reeway  | 2650                                 | 0.92                                      | Level                  | 2                            | 0   | 0.990                              | 1.00                                 |                                   | 2909                                 |  |  |  |
| Ramp  | 340                                  | 0.92                                      | Level                  | 2                            | 0   | 0.990                              | 1.00                                 |                                   | 373                                  |  |  |  |
| JpStream  | 690                                  | 0.92                                      | Level                  | 2                            | 0   | 0.990                              | 1.00                                 | 757                               |                                      |  |  |  |
| DownStream  |                                      |   |                        |                              |   |                                    |                                      | 101                               |                                      |  |  |  |
|   |                                      | Merge Areas                               |                        | •                            |   | •                                  | Diverge Are                          | erge Areas                        |                                      |  |  |  |
| stimation of  |                                      | Estimati                                  | ion of v <sub>12</sub> |                              |   |                                    |                                      |                                   |                                      |  |  |  |
|   | V <sub>12</sub> = V <sub>F</sub>     | (P)                                       |                        |                              |   |                                    |                                      |                                   |                                      |  |  |  |
|   | 12 1                                 |   | - 0 0 0 0              |                              |   | V <sub>12</sub>                    | $= V_R + (V_F -$                     | · V <sub>R</sub> )P <sub>FD</sub> |                                      |  |  |  |
| EQ =  |                                      | (Equation 2                               |                        |                              | L <sub>EQ</sub> =                               |                                    | (Equation                            | 25-8 or 25-                       | 9)                                   |  |  |  |
| FM =  | 0.601                                | using Equation                            | on (Exhibit 25-5)      |                              | P <sub>FD</sub> =                               |                                    | using Equ                            | ation (Exhibi                     | t 25-12)                             |  |  |  |
| 12 =  | 1749                                 | pc/h                                      |                        |                              | V <sub>12</sub> =                               |                                    | pc/h                                 |                                   |                                      |  |  |  |
| or V <sub>av34</sub>  |                                      | pc/h (Equatio                             | n 25-4 or 25-          |                              | V <sub>3</sub> or V <sub>av34</sub>             |                                    | •                                    | ion 25-15 or 2                    | 5-16)                                |  |  |  |
|   | 5)                                   | _   |                        |                              |   | <sub>4</sub> > 2,700 pc/h          |                                      |                                   | 0 10)                                |  |  |  |
| s $V_3$ or $V_{av34} > 2,700$   |                                      |   |                        |                              |   |                                    |                                      |                                   |                                      |  |  |  |
| s $V_3$ or $V_{av34} > 1.5$ *   | $V_{12}/2  \square  Ye$              | s 🗹 No                                    |                        |                              | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No  |                                    |                                      |                                   |                                      |  |  |  |
| Yes,V <sub>12a</sub> =  | pc/h                                 | (Equation 25-                             | 8)                     |                              | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |                                    |                                      |                                   |                                      |  |  |  |
| Capacity Che  | cks                                  |   |                        |                              | Capacity Checks                                 |                                    |                                      |                                   |                                      |  |  |  |
|   | Actual                               | Ca  | pacity                 | LOS F?                       |   | Actu                               | al                                   | Capacity                          | LOS F                                |  |  |  |
|   |                                      | Î I                                       | , ,                    | î .                          | V <sub>F</sub>                                  |                                    | Exhibit                              |                                   |                                      |  |  |  |
| V   | 2202                                 | F., Likit 0F 7                            |                        | N-                           | <u> </u>  | 1/                                 | _                                    | _                                 |                                      |  |  |  |
| $V_{FO}$  | 3282                                 | Exhibit 25-7                              |                        | No                           | $V_{FO} = V_{F}$                                | - V <sub>R</sub>                   | Exhibit                              |                                   |                                      |  |  |  |
|   |                                      |   |                        |                              | V <sub>R</sub>                                  |                                    | Exhibit                              | 25-3                              |                                      |  |  |  |
| Flow Entering   | Merge In                             | fluence A                                 | 'ea                    |                              | Flow En   | tering Div                         | verge Influ                          | ience Are                         | ea                                   |  |  |  |
|   | Actual                               | Max D                                     | esirable               | Violation?                   |   | Actual                             | 1                                    | esirable                          | Violation?                           |  |  |  |
| V <sub>R12</sub>  | 2122                                 | Exhibit 25-7                              | 4600:AII               | No                           | V <sub>12</sub>                                 |                                    | Exhibit 25-1                         | 4                                 |                                      |  |  |  |
| Level of Service Determination (if not F)  Level of Service Determination |                                      |   |                        |                              |   |                                    | Determina                            | tion (if n                        | ot F)                                |  |  |  |
|   |                                      | 0.0078 V <sub>12</sub> - 0.00             |                        |                              | 1   | $D_R = 4.252 +$                    |                                      | •                                 |                                      |  |  |  |
| <sub>R</sub> = 16.5 (pc)  |                                      | 12  | М                      |                              | L   | c/mi/ln)                           | 12                                   |                                   |                                      |  |  |  |
| OS = B (Exhib   |                                      |   |                        |                              |   | xhibit 25-4)                       |                                      |                                   |                                      |  |  |  |
| Speed Detern  | •                                    |   |                        |                              | `   | etermina                           | tion                                 |                                   |                                      |  |  |  |
| preed Deleili   |                                      |   |                        |                              | <del></del>                                     |                                    | uon                                  |                                   |                                      |  |  |  |
|   | $M_S = 0.286 \text{ (Exibit 25-19)}$ |   |                        |                              |   | xhibit 25-19)                      |                                      |                                   |                                      |  |  |  |
| 1 <sub>S</sub> = 0.286 (Exit  | ,                                    | S <sub>R</sub> = 52.0 mph (Exhibit 25-19) |                        |                              |   |                                    | S <sub>R</sub> = mph (Exhibit 25-19) |                                   |                                      |  |  |  |
| -   |                                      |   |                        |                              | ., .  |                                    |                                      |                                   |                                      |  |  |  |
| <sub>R</sub> = 52.0 mph (   |                                      |   |                        |                              | ., .  | on (Exhibit 25-<br>oh (Exhibit 25- |                                      |                                   |                                      |  |  |  |

|   |  | RAMP                                | S AND RAM                                 |   |   | RKS                                   | HEET            |   |                     |                                    |
|---|--|-------------------------------------|---|---|---|---------------------------------------|-----------------|---|---------------------|------------------------------------|
| General Info  | rmation  |                                     |   | Site Infor  |   |                                       |                 |   |                     |                                    |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Perio<br>Project Description | 9/08/.<br>od AM  |                                     | Ju<br>Ju                                  | eeway/Dir of Tr<br>nction<br>risdiction<br>nalysis Year |   | Northb<br>Exit 4 I<br>NYSDO<br>2009 E | TC              |   |                     |                                    |
| Inputs  | EXIL 4   |                                     |   |   |   |                                       |                 |   |                     |                                    |
|   |  | Terrain: Leve                       |   |   |   |                                       |                 |   | Downstrea           | m Adi                              |
| Upstream Adj Ram  |  |                                     |   |   |   |                                       |                 |   | Ramp                | iiii Auj                           |
| ☐ Yes ☐ C   | n  |                                     |   |   |   |                                       |                 |   | ✓ Yes               | ✓ On                               |
| ™ No □ C  | off  |                                     |   |   |   |                                       |                 |   | □ No                | ☐ Off                              |
| L <sub>up</sub> = ft  |  |                                     |   |   |   |                                       |                 |   | L <sub>down</sub> = | 2660 ft                            |
| V <sub>u</sub> = veh/   | 'h   | S                                   | $_{FF} = 56.0 \text{ mph}$ Sketch ( $\pm$ | show lanes, L <sub>A</sub> ,                            | $S_{FR} = \frac{1}{2}$<br>$L_{D'}V_{R'}V_{f}$ | 40.0 mp                               | h               |   | V <sub>D</sub> =    | 550 veh/h                          |
| Conversion  | to pc/h Und  | der Base (                          | Conditions                                |   |   |                                       |                 |   |                     |                                    |
| (pc/h)  | V<br>(Veh/hr)  | PHF                                 | Terrain                                   | %Truck  | %Rv   |                                       | f <sub>HV</sub> | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 3000   | 0.92                                | Level                                     | 2   | 0   | 0.                                    | .990            | 1.00  | 32                  | 93                                 |
| Ramp  | 810  | 0.82                                | Level                                     | 2   | 0   | 0                                     | .990            | 1.00  | 99                  | 98                                 |
| UpStream  |  |                                     |   |   |   |                                       |                 | 1.00  |                     |                                    |
| DownStream  | am 550 0.92 Level 2 0 0.990 1.00  Merge Areas Diverge Ar |                                     |   |   |   |                                       | 1.00            | 604   |                     |                                    |
| Estimation of   |  | Estimat                             | ion c                                     |   | Diverge Areas                                 |                                       |                 |   |                     |                                    |
|   | V <sub>12</sub> = V <sub>F</sub>                         | (D)                                 |   |   |   |                                       |                 | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | \D                  |                                    |
| 1   |  | (' <sub>FM</sub> )<br>ation 25-2 or | 25-3)                                     |   | -   |                                       |                 | Equation 25-8                                       |                     |                                    |
| L <sub>EQ</sub> =<br>P <sub>FM</sub> =  |  | Equation (E                         |   |   | L <sub>EQ</sub> =<br>P <sub>FD</sub> =        |                                       |                 | .632 using Eq                                       |                     | ihit 25-12)                        |
| V <sub>12</sub> =   | pc/h   | _900.00. (2                         |   |   | V <sub>12</sub> =                             |                                       |                 | 448 pc/h  | dation (Exil        | IIDIT 20 12)                       |
| V <sub>3</sub> or V <sub>av34</sub>   |  | (Equation 25                        | -4 or 25-5)                               |   | V <sub>3</sub> or V <sub>av34</sub>           |                                       |                 | 45  pc/h (Equa                                      | tion 25-15          | or 25-16)                          |
| Is $V_3$ or $V_{av34} > 2.7$  |  |                                     | ,   |   |   | 34 > 2,7                              |                 | Yes Mo  |                     | 0. 20 .0,                          |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5  |  |                                     |   |   |   |                                       |                 | Tyes  ✓ No  |                     |                                    |
| If Yes,V <sub>12a</sub> =   | pc/h   | (Equation 25                        | -8)                                       |   | If Yes,V <sub>12a</sub> =                     |                                       |                 | oc/h (Equation                                      | 25-18)              |                                    |
| Capacity Ch   | ecks   |                                     |   |   | Capacit                                       | y Ch                                  | ecks            |   |                     |                                    |
|   | Actual   | C                                   | apacity                                   | LOS F?  |   |                                       | Actual          | Ca  | pacity              | LOS F                              |
|   |  |                                     |   |   | V <sub>F</sub>                                |                                       | 3293            | Exhibit 25-1  | 4 6780              | No                                 |
| $V_{FO}$  |  | Exhibit 25-7                        |   |   | $V_{FO} = V_{F}$                              | - V <sub>R</sub>                      | 2295            | Exhibit 25-1  | 4 6780              | No                                 |
|   |  |                                     |   |   | V <sub>R</sub>                                |                                       | 998             | Exhibit 25-3  | 2100                | No                                 |
| Flow Enterin  | ng Merge In  | 1                                   |   |   | Flow En                                       | ıterir                                | ig Dive         | rge Influen   |                     |                                    |
|   | Actual   | 1                                   | Desirable                                 | Violation?  |   | _                                     | Actual          | Max Desirab   |                     | Violation                          |
| V <sub>R12</sub>  | <u> </u>   | Exhibit 25-7                        | · - ·                                     |   | V <sub>12</sub>                               |                                       | 2448            | Exhibit 25-14                                       | 4400:All            | No No                              |
| Level of Ser  |  |                                     |   |   |   |                                       |                 | terminatio  |                     | F)                                 |
| $D_R = 5.475 + 0$   |  | 0.0078 V <sub>12</sub> -            | 0.00627 L <sub>A</sub>                    |   |   |                                       |                 | 0.0086 V <sub>12</sub> - 0.                         | 009 L <sub>D</sub>  |                                    |
| $D_R = (pc/m)$  |  |                                     |   |   | 1,  |                                       | /mi/ln)         |   |                     |                                    |
|   | oit 25-4)  |                                     |   |   |   | •                                     | bit 25-4)       |   |                     |                                    |
| Speed Deter   | mination   |                                     |   |   | Speed L                                       |                                       |                 |   |                     |                                    |
| $M_S = $ (Exibit 2  |  |                                     |   |   | 1 *   |                                       | xhibit 25       |   |                     |                                    |
| • •   | hibit 25-19)   |                                     |   |   |   | -                                     | (Exhibit        |   |                     |                                    |
|   | hibit 25-19)   |                                     |   |   | S <sub>0</sub> = 61.4 mph (Exhibit 25-19)     |                                       |                 |   |                     |                                    |
| . ,   |  |                                     |   |   |   |                                       |                 |   |                     |                                    |
| S <sub>0</sub> = mph (Ex  | hibit 25-19)<br>hibit 25-14)                             | All Rights Resen                    | red                                       |   | $S_0 = 6^{\circ}$                             | 1.4 mpt<br>2.2 mpt                    | (Exhibit        | 25-19)<br>25-15)                                    | erated: 12/16/      | /2011                              |

|   |                  | RAI                                     | MPS AND                      | RAMP JUNG                | CTIONS W  | ORKSHE   | ET .  |                                    |                         |                                      |  |  |
|---|------------------|---|------------------------------|--------------------------|---|--|---|------------------------------------|-------------------------|--------------------------------------|--|--|
| Genera  | I Inforr         |   |                              |                          | Site Infor  |  |   |                                    |                         |                                      |  |  |
| Analyst<br>Agency or C<br>Date Perfori<br>Analysis Tin<br>Project Desi    | med<br>ne Period | SEB<br>CHA<br>9/08/:<br>AM              | 2011                         | Jui<br>Jui               | eeway/Dir of Tr<br>nction<br>isdiction<br>alysis Year |  | Northbound I-8<br>Exit 4 NB On-F<br>NYSDOT<br>2009 Existing             |                                    |                         |                                      |  |  |
| Inputs  | cription         | LAIL 4                                  |                              |                          |   |  |   |                                    |                         |                                      |  |  |
| Upstream A  | dj Ramp          |   | Terrain: Level               |                          |   |  |   |                                    | Downstre<br>Ramp        | am Adj                               |  |  |
| ☐ Yes   | □ On             |   |                              |                          |   |  |   |                                    | ✓ Yes                   | ☐ On                                 |  |  |
| ✓ No  | ☐ Off            |   |                              |                          |   |  |   |                                    | □ No                    | ✓ Off                                |  |  |
| -up =   | ft               |   | S                            | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4  | 0.0 mph   |                                    | L <sub>down</sub> =     | 3500 ft                              |  |  |
| √ <sub>u</sub> =  | veh/h            |   |                              | Sketch ( s               | how lanes, L <sub>A</sub> ,                           | $L_{D'}V_{R'}V_{f}$  |   |                                    | $V_D =$                 | 440 veh/h                            |  |  |
| Conver  | sion to          | pc/h Und                                | der Base (                   | Conditions               |   |  |   |                                    |                         |                                      |  |  |
| (pc/l   | h)               | V<br>(Veh/hr)                           | PHF                          | Terrain                  | %Truck  | %Rv  | f <sub>HV</sub>   | f <sub>p</sub>                     | v = V/PHI               | = x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway   |                  | 2200                                    | 0.92                         | Level                    | 2   | 0  | 0.990   | 1.00                               |                         | 2415                                 |  |  |
| Ramp  |                  | 550                                     | 0.92                         | Level                    | 2   | 0  | 0.990   | 1.00                               |                         | 604                                  |  |  |
| UpStream<br>DownStrea   | ım               | 440                                     | 0.96                         | Level                    | 2   | 0  | 0.990   | 1.00                               | _                       | 463                                  |  |  |
| Downstea  | 1111             |   | Merge Areas                  | Levei                    | Z   | 0  | 0.990   | Diverge Are                        |                         | 403                                  |  |  |
| Estimation of v <sub>12</sub>   |                  |   |                              |                          |   | Estimati   | on of v <sub>12</sub>   | 2.vo.go /                          | -                       |                                      |  |  |
|   |                  | V <sub>12</sub> = V <sub>F</sub>        | (P )                         |                          |   | 1  |   | = V <sub>R</sub> + (V <sub>F</sub> | - \/ \P                 |                                      |  |  |
| l =   |                  | 12 1                                    | 1 141                        | 25-2 or 25-3)            |   | l =  | * 12  |                                    | *R/' FD<br>25-8 or 25-9 | ))                                   |  |  |
| - <sub>EQ</sub> =   |                  |   |                              | on (Exhibit 25-5)        |   | L <sub>EQ</sub> =<br>P <sub>FD</sub> =                                 |   |                                    | ation (Exhibit          |                                      |  |  |
| P <sub>FM</sub> =<br>V <sub>12</sub> =                                    |                  | 0.603<br>1456 <b>r</b>                  |                              | OII (EXIIIDII 25-5)      |   | V <sub>12</sub> =  |   | pc/h                               | ation (Exhibit          | 25-12)                               |  |  |
| 12 -<br>V <sub>3</sub> or V <sub>av34</sub>                               |                  |   |                              | n 25-4 or 25-5)          |   | V <sub>12</sub> –<br>V <sub>3</sub> or V <sub>av34</sub>               |   | •                                  | tion 25-15 or 25        | i <sub>-</sub> 16)                   |  |  |
|   | > 2 700          | pc/h? ☐ Yes                             |                              | 123-4 01 23-3)           |   |  | 4 > 2,700 pc/h  |                                    |                         | 1-10)                                |  |  |
|   |                  | V <sub>12</sub> /2                      |                              |                          |   |  | <sub>14</sub> > 2,766 pc/11<br><sub>14</sub> > 1.5 * V <sub>12</sub> /2 |                                    |                         |                                      |  |  |
| f Yes,V <sub>12a</sub> =  |                  | · <del>-</del>                          | Equation 25                  | -8)                      |   | If Yes, V <sub>12a</sub> =   |   |                                    |                         |                                      |  |  |
| Capacit   |                  |   | (Equation 20                 | <u> </u>                 |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) <b>Capacity Checks</b> |   |                                    |                         |                                      |  |  |
| Сарасп  | ly Office        | Actual                                  | T C                          | apacity                  | LOS F?  | Capacity   | Actu  | al <b>I</b>                        | Capacity                | LOS F?                               |  |  |
|   |                  | 7101441                                 | Ī                            | apa on y                 |   | V <sub>F</sub>   | 7.101.0   | Exhibit                            | 1                       |                                      |  |  |
| V <sub>F</sub>  |                  | 3019                                    | Exhibit 25-7                 |                          | No  | $V_{FO} = V_{F}$   | - V <sub>2</sub>  | Exhibit                            | _                       |                                      |  |  |
| , F(  | 0                | 3017                                    | EXHIBIT 25 7                 |                          | 140   | V <sub>R</sub>   | · R   | Exhibit                            |                         | +                                    |  |  |
|   | - 4 - 11         | Mayerale                                | <u> </u>                     |                          | <u> </u>  | <del>;</del>   | ta viva er Dir  |                                    |                         |                                      |  |  |
| -10W E  | nering           | Actual                                  | fluence A                    | <b>rea</b><br>Desirable  | Violation?  | ILIOM EU   | Actual  |                                    | uence Are<br>Desirable  | Violation?                           |  |  |
| V <sub>R1</sub>   |                  | 2060                                    | Exhibit 25-7                 | 4600:All                 | No  | V <sub>12</sub>  | Actual  | Exhibit 25-                        |                         | v ioiation :                         |  |  |
| Level of Service Determination (if not F)  Level of Service Determination |                  |   |                              |                          |   |  | ot F)   |                                    |                         |                                      |  |  |
|   |                  |   | 0.0078 V <sub>12</sub> - 0.0 |                          |   |  | $D_{R} = 4.252 +$   |                                    |                         | ··· /                                |  |  |
| O <sub>R</sub> =  | 15.6 (pc/i       | • | 12 313                       | А                        |   | L  | c/mi/ln)  | 12                                 | 2 0                     |                                      |  |  |
| _OS =   | B (Exhibi        | t 25-4)                                 |                              |                          |   |  | xhibit 25-4)  |                                    |                         |                                      |  |  |
| Speed I   | Determ           | ination                                 |                              |                          |   |  | etermina  | tion                               |                         |                                      |  |  |
| _   | .280 (Exib       |   |                              |                          |   | <del>'</del>   | xhibit 25-19)   |                                    |                         |                                      |  |  |
| Ü   | -                | Exhibit 25-19)                          |                              |                          |   |  | oh (Exhibit 25-   | 19)                                |                         |                                      |  |  |
| -11 3   | 2.1 mpn (L       | -ATTION 23-17)                          |                              |                          |   |  |   |                                    |                         |                                      |  |  |
|   | 43 mnh /         | vhihit 25-10\                           |                              |                          |   | $S_0 = mr$   | oh (Exhibit 25-1  | 19)                                |                         |                                      |  |  |
| S <sub>0</sub> = 54   | -                | Exhibit 25-19)<br>Exhibit 25-14)        |                              |                          |   |  | oh (Exhibit 25-<br>oh (Exhibit 25-                                      |                                    |                         |                                      |  |  |

|   |                             | RAMPS                    | AND RAM                  | P JUNCTI  | ONS WO   | RKS                                     | HEET            |  |                     |                                    |  |
|---|-----------------------------|--------------------------|--------------------------|---|--|---|-----------------|--|---------------------|------------------------------------|--|
| General Info  | rmation                     |                          | 7 1112 117 111           | Site Infor  |  |   |                 |  |                     |                                    |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | SEB<br>CHA<br>9/08/<br>d AM |                          | Ju<br>Ju                 | eeway/Dir of Tranction<br>Inction<br>Irisdiction<br>Inalysis Year | avel   | Northbo<br>Exit 5 N<br>NYSDC<br>2009 Ex | T               |  |                     |                                    |  |
| Project Description   | Exit 4                      |                          |                          |   |  |   |                 |  |                     |                                    |  |
| Inputs  |                             | Terrain: Level           |                          |   |  |   |                 |  | Dawastras           | A al:                              |  |
| Upstream Adj Ramp   |                             | 2010                     |                          |   |  |   |                 |  | Downstrea<br>Ramp   | m Auj                              |  |
| ✓ Yes ✓ O   | n                           |                          |                          |   |  |   |                 |  | □ Yes               | □ On                               |  |
| □ No □ O  | ff                          |                          |                          |   |  |   |                 |  |                     | ☐ Off                              |  |
| 3500  | •                           |                          |                          |   |  |   |                 |  |                     | ft                                 |  |
| L <sub>up</sub> = 3500  | π                           | S                        | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 3  | 5.0 mp                                  | h               |  | L <sub>down</sub> = | 11                                 |  |
| $V_u = 550 \text{ v}$   | eh/h                        |                          |                          | show lanes, L <sub>A</sub> ,                                      |  | .о.ор                                   |                 |  | V <sub>D</sub> =    | veh/h                              |  |
| Conversion t  | o pc/h Und                  | der Base C               |                          | A   | D K I  |   |                 |  |                     |                                    |  |
| (pc/h)  | V<br>(Veh/hr)               | PHF                      | Terrain                  | %Truck  | %Rv  |   | f <sub>HV</sub> | f <sub>p</sub>                         | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway   | 2700                        | 0.92                     | Level                    | 2   | 0  |   | 990             | 1.00                                   | 296                 | 54                                 |  |
| Ramp  | 440                         | 0.96                     | Level                    | 2   | 0  | <del></del>                             | 990             | 1.00                                   | 46                  |                                    |  |
| UpStream  | 550                         | 0.92                     | Level                    | 2   | 0  | 0.9                                     | 990             | 1.00                                   | 60                  | 4                                  |  |
| DownStream  |                             |                          |                          |   |  |   |                 |  |                     |                                    |  |
| Merge Areas <b>Estimation of v</b> <sub>12</sub>                      |                             |                          |                          |   | Ectimot  | ion o                                   |                 | Diverge Areas                          |                     |                                    |  |
| Estillation o   |                             |                          |                          |   | Estimati   | 1011 0                                  |                 |  |                     |                                    |  |
|   | $V_{12} = V_F$              |                          |                          |   |  |   |                 | = V <sub>R</sub> + (V <sub>F</sub> - V |                     |                                    |  |
| L <sub>EQ</sub> =   |                             | ation 25-2 or            |                          |   | L <sub>EQ</sub> =  |   |                 | 808.59 (Equat                          |                     |                                    |  |
| P <sub>FM</sub> =   | _                           | Equation (E              | khibit 25-5)             |   | P <sub>FD</sub> =  |   |                 | .706 using Ed                          | quation (Exhi       | bit 25-12)                         |  |
| V <sub>12</sub> =   | pc/h                        | <i>-</i>                 |                          |   | V <sub>12</sub> =  |   |                 | 228 pc/h                               |                     |                                    |  |
| V <sub>3</sub> or V <sub>av34</sub>                                   |                             | (Equation 25             | -4 or 25-5)              |   | V <sub>3</sub> or V <sub>av34</sub>                                    | 0.7                                     |                 | 36 pc/h (Equa                          | ation 25-15         | or 25-16)                          |  |
| Is $V_3$ or $V_{av34} > 2.79$   |                             |                          |                          |   |  |   |                 | Yes ☑ No                               |                     |                                    |  |
| Is $V_3$ or $V_{av34} > 1.5$<br>If Yes, $V_{12a} =$                   | ·=                          |                          | 0)                       |   |  |   |                 | Yes Mo                                 | OF 10\              |                                    |  |
| Capacity Che  |                             | (Equation 25             | -0)                      |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) <b>Capacity Checks</b> |   |                 |  |                     |                                    |  |
| Сараспу Спе   | Actual                      | l Ca                     | pacity                   | LOS F?  | Capacity   | y Crie                                  | Actual          | l Ca                                   | pacity              | LOS F?                             |  |
|   | Actual                      |                          | pacity                   | LOST:   | V <sub>F</sub>   |   | 2964            | Exhibit 25-1                           | <u> </u>            | No                                 |  |
| $V_{FO}$  |                             | Exhibit 25-7             |                          |   | $V_{FO} = V_{F}$   | - V <sub>2</sub>                        | 2501            | Exhibit 25-1                           | +                   | No                                 |  |
| 1 +0  |                             | EXHIBIT 20 7             |                          |   | V <sub>R</sub>   | ·R                                      | 463             | Exhibit 25-3                           | +                   | No                                 |  |
| Flow Enterin  | a Morae In                  | fluence A                | roa                      |   | <del> </del>   | torin                                   |                 | rge Influen                            |                     | 110                                |  |
| I IOW LIILEIIII   | Actual                      | 1                        |                          | Violation?  | I IOW LII  |   | octual          | Max Desiral                            |                     | Violation?                         |  |
| Actual Max Desirable Viola V <sub>R12</sub> Exhibit 25-7              |                             |                          |                          |   | V <sub>12</sub>  | _                                       | 228             | Exhibit 25-14                          | 4400:All            | No                                 |  |
| Level of Serv   | rice Detern                 | nination (i              | f not F)                 |   | 4  | Serv                                    | rice De         | terminatio                             | n (if not l         | =)                                 |  |
| $D_R = 5.475 + 0$   | .00734 v <sub>R</sub> +     | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |   |  | D <sub>R</sub> = 4                      | .252 + 0        | .0086 V <sub>12</sub> - 0              | .009 L <sub>D</sub> | •                                  |  |
| D <sub>R</sub> = (pc/mi   | /ln)                        |                          |                          |   | D <sub>R</sub> = 21  | .2 (pc/                                 | mi/ln)          |  |                     |                                    |  |
|   | it 25-4)                    |                          |                          |   |  |   | oit 25-4)       |  |                     |                                    |  |
| Speed Deter   | mination                    |                          |                          |   | Speed D  | Deter                                   | minatio         | on                                     |                     |                                    |  |
| M <sub>S</sub> = (Exibit 25-19)                                       |                             |                          |                          |   | $D_s = 0.4$  | 470 (E:                                 | xhibit 25       | -19)                                   |                     |                                    |  |
| -   | nibit 25-19)                |                          |                          |   | S <sub>R</sub> = 49  | .4 mph                                  | (Exhibit        | 25-19)                                 |                     |                                    |  |
|   | nibit 25-19)                |                          |                          |   | $S_0 = 61.4 \text{ mph (Exhibit 25-19)}$                               |   |                 |  |                     |                                    |  |
| -   | nibit 25-14)                |                          |                          |   |  | .9 mph                                  | (Exhibit        | 25-15)                                 |                     |                                    |  |
| Copyright © 2007 University of Florida, All Rights Reserved           |                             |                          |                          |   | HCS+TM \   |   | - 0             | Ger                                    | nerated: 12/16/     | 2011 8:32 <i>A</i>                 |  |

|  |                | KAIVIP              | S AND RAM                |  |  | KNO                                  | пеет            |   |                     |                                    |  |
|--|----------------|---------------------|--------------------------|--|--|--------------------------------------|-----------------|---|---------------------|------------------------------------|--|
| General Info   | rmation        |                     |                          | Site Infor   | mation   |                                      |                 |   |                     |                                    |  |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric | 9/08/          |                     | Ji<br>Ji                 | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | ]<br>]   | Southb<br>Exit 2W<br>NYSDC<br>2009 E | / Off<br>DT     |   |                     |                                    |  |
| Project Description  | Exit 4         |                     |                          |  |  |                                      |                 |   |                     |                                    |  |
| Inputs   |                |                     |                          |  |  |                                      |                 |   |                     |                                    |  |
| Upstream Adj Ramı  |                | Terrain: Leve       |                          |  |  |                                      |                 |   | Downstrea<br>Ramp   | m Adj                              |  |
| ☐ Yes ☐ O  |                |                     |                          |  |  |                                      |                 |   | ✓ Yes               | ☑ On                               |  |
| ✓ No   | ff             |                     |                          |  |  |                                      |                 |   | □ No                | ☐ Off                              |  |
| L <sub>up</sub> = ft   |                | 5                   | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4  | 0 0 mn                               | h               |   | L <sub>down</sub> = | 1300 ft                            |  |
| V <sub>u</sub> = veh/  |                |                     | Sketch (                 | show lanes, L <sub>A</sub>                                 |  | 0.0 mp                               | '''             |   | V <sub>D</sub> =    | 310 veh/h                          |  |
| Conversion   | to pc/h Un     | der Base (          | Conditions               |  |  |                                      |                 | -   |                     |                                    |  |
| (pc/h)   | V<br>(Veh/hr)  | PHF                 | Terrain                  | %Truck   | %Rv  |                                      | f <sub>HV</sub> | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 5150           | 0.92                | Level                    | 2  | 0  | 0.                                   | 990             | 1.00  | 565                 | 54                                 |  |
| Ramp   | 890            | 0.92                | Level                    | 2  | 0  | 0.                                   | 990             | 1.00  | 97                  | 7                                  |  |
| UpStream   | 240            | 0.00                | Lauri                    | 1  |  | +-                                   | 000             | 1.00  |                     |                                    |  |
| DownStream   | 310            | 0.92<br>Merge Areas | Level                    | 2  | 0  | 0.                                   | 990             | 1.00<br>Diverge Areas                               | 34                  | 0                                  |  |
| Estimation o   |                | ivier ge Areas      |                          |  | Estimati   | ion o                                |                 | Diverge Areas                                       |                     |                                    |  |
|  |                | (D.)                |                          |  | Lotimati   |                                      |                 | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \               | \D                  |                                    |  |
|  | $V_{12} = V_F$ |                     |                          |  |  |                                      |                 | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> |                     |                                    |  |
| L <sub>EQ</sub> =  |                | ation 25-2 or       |                          |  | L <sub>EQ</sub> =  |                                      |                 | Equation 25-8                                       |                     |                                    |  |
| P <sub>FM</sub> =  | _              | Equation (E         | xhibit 25-5)             |  | P <sub>FD</sub> =  |                                      |                 | .574 using Ed                                       | uation (Exhi        | bit 25-12)                         |  |
| V <sub>12</sub> =  | pc/h           |                     |                          |  | V <sub>12</sub> =  |                                      |                 | 660 pc/h  |                     |                                    |  |
| $V_3$ or $V_{av34}$  |                | (Equation 25        | -4 or 25-5)              |  | $V_3$ or $V_{av34}$  |                                      |                 | 994 pc/h (Equ                                       | ation 25-15         | or 25-16                           |  |
| Is $V_3$ or $V_{av34} > 2.7$   |                |                     |                          |  |  |                                      |                 | Yes Mo  |                     |                                    |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                         | :=             |                     |                          |  | 0 0.0  |                                      |                 | Tyes   ✓ No   |                     |                                    |  |
| If Yes,V <sub>12a</sub> =  |                | (Equation 25        | -8)                      |  | If Yes,V <sub>12a</sub> =  |                                      |                 | oc/h (Equation                                      | 25-18)              |                                    |  |
| Capacity Ch  | ecks           |                     |                          |  | Capacity   | y Ch                                 | ecks            |   |                     |                                    |  |
|  | Actual         | C                   | apacity                  | LOS F?   |  |                                      | Actual          |   | pacity              | LOS F                              |  |
|  |                |                     |                          |  | V <sub>F</sub>   |                                      | 5654            | Exhibit 25-1  | 4 6780              | No                                 |  |
| V <sub>FO</sub>  |                | Exhibit 25-7        |                          |  | $V_{FO} = V_{F}$   | - V <sub>R</sub>                     | 4677            | Exhibit 25-1  | 4 6780              | No                                 |  |
|  |                |                     |                          |  | $V_R$  |                                      | 977             | Exhibit 25-3  | 3 2100              | No                                 |  |
| Flow Enterin   | g Merge In     | fluence A           | rea                      |  | Flow En  | terin                                | g Dive          | rge Influen   | ce Area             |                                    |  |
|  | Actual         | 1                   | Desirable                | Violation?   |  | _                                    | Actual          | Max Desiral   |                     | Violation                          |  |
| V <sub>R12</sub>   |                | Exhibit 25-7        |                          |  | V <sub>12</sub>  | 3                                    | 3660            | Exhibit 25-14                                       | 4400:All            | No                                 |  |
| Level of Serv  | vice Deterr    | nination (i         | f not F)                 |  |  | Ser                                  | vice De         | terminatio  | n (if not l         | <del></del>                        |  |
| $D_R = 5.475 + 0$  |                |                     |                          |  | _  |                                      |                 | .0086 V <sub>12</sub> - 0.                          | -                   |                                    |  |
| D <sub>R</sub> = (pc/mi  |                | 12                  | , ,                      |  |  |                                      | /mi/ln)         | 12  | 2                   |                                    |  |
| ***  | oit 25-4)      |                     |                          |  |  | (Exhil                               | oit 25-4)       |   |                     |                                    |  |
| Speed Deter  |                |                     |                          |  | Speed D  | •                                    |                 | on  |                     |                                    |  |
| $M_S = $ (Exibit 2   |                |                     |                          |  | <del></del>  |                                      | xhibit 25       |   |                     |                                    |  |
| · ·  | hibit 25-19)   |                     |                          |  |  | •                                    | (Exhibit        | *   |                     |                                    |  |
|  |                |                     |                          |  | 1  | -                                    |                 |   |                     |                                    |  |
|  | hibit 25-19)   |                     |                          |  | $S_0$ = 57.6 mph (Exhibit 25-19)<br>S = 52.2 mph (Exhibit 25-15) |                                      |                 |   |                     |                                    |  |
| S = mph (Exhibit 25-14)  |                |                     |                          |  |  |                                      |                 |   |                     |                                    |  |

| 0  |                      | IVAIVIE                | S AND RAM              |   |  | IVIVO                                 |                      |  |                   |                                    |  |
|--|----------------------|------------------------|------------------------|---|--|---------------------------------------|----------------------|--|-------------------|------------------------------------|--|
| General Info   |                      |                        |                        | Site Infor  |  |                                       |                      |  |                   |                                    |  |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Perio | 9/08/                |                        | J                      | reeway/Dir of Tr<br>unction<br>urisdiction<br>analysis Year | ]<br>]                                   | Southb<br>Exit 4 S<br>NYSD(<br>2009 E | TC                   |  |                   |                                    |  |
| Project Description  |                      |                        |                        |   |  | 2007 2                                | , mounty             |  |                   |                                    |  |
| Inputs   |                      |                        |                        |   |  |                                       |                      |  |                   |                                    |  |
| Upstream Adj Ram   | р                    | Terrain: Leve          |                        |   |  |                                       |                      |  | Downstrea<br>Ramp | m Adj                              |  |
| □ Yes □ C  | n                    |                        |                        |   |  |                                       |                      |  | ✓ Yes             | ✓ On                               |  |
| M No □ C   | ff                   |                        |                        |   |  |                                       |                      |  | □ No              | ☐ Off                              |  |
| L <sub>up</sub> = ft   |                      | S                      | FF = 56.0 mph          |   | S <sub>FR</sub> = 4                      | 0.0 mp                                | h                    |  | 401111            | 3100 ft                            |  |
| V <sub>u</sub> = veh/  | h                    |                        | Sketch (               | show lanes, L <sub>A</sub>                                  | $L_{D'}V_{R'}V_{f}$                      |                                       |                      |  | V <sub>D</sub> =  | 490 veh/                           |  |
| Conversion   | to pc/h Un           | der Base (             | Conditions             |   |  |                                       |                      |  |                   |                                    |  |
| (pc/h)   | V<br>(Veh/hr)        | PHF                    | Terrain                | %Truck  | %Rv                                      |                                       | f <sub>HV</sub>      | f <sub>p</sub>                         | v = V/PHF         | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 5500                 | 0.92                   | Level                  | 2   | 0  | 0.                                    | 990                  | 1.00                                   | 603               | 38                                 |  |
| Ramp   | 1070                 | 0.92                   | Level                  | 2   | 0  | 0.                                    | 990                  | 1.00                                   | 117               | 75                                 |  |
| UpStream   | 1                    |                        |                        |   |  | +                                     |                      |  |                   |                                    |  |
| DownStream   | 490                  | 0.93                   | Level                  | 3   | 0  | 0.                                    | 985                  | 1.00<br>Diverge Areas                  | 53                | 5                                  |  |
| Estimation o   |                      | Merge Areas            |                        |   | Estimati                                 | ion c                                 |                      | Diverge Areas                          |                   |                                    |  |
| Liganiation  |                      | >                      |                        |   | LStillati                                | 011                                   |                      |  |                   |                                    |  |
|  | $V_{12} = V_{F}$     |                        |                        |   |  |                                       |                      | = V <sub>R</sub> + (V <sub>F</sub> - V |                   |                                    |  |
| L <sub>EQ</sub> =  |                      | ation 25-2 or          |                        |   | L <sub>EQ</sub> =                        |                                       |                      | Equation 25-8                          |                   |                                    |  |
| P <sub>FM</sub> =  | using                | Equation (E            | xhibit 25-5)           |   | P <sub>FD</sub> =                        |                                       | 0                    | .555 using Ed                          | quation (Exh      | bit 25-12)                         |  |
| V <sub>12</sub> =  | pc/h                 |                        |                        |   | V <sub>12</sub> =                        |                                       | 3                    | 874 pc/h                               |                   |                                    |  |
| V <sub>3</sub> or V <sub>av34</sub>                                  |                      | (Equation 25           | -4 or 25-5)            |   | $V_3$ or $V_{av34}$                      |                                       |                      | 164 pc/h (Equ                          | ation 25-15       | or 25-16                           |  |
| Is $V_3$ or $V_{av34} > 2.7$   | '00 pc/h?            | s 🗆 No                 |                        |   | Is V <sub>3</sub> or V <sub>av3</sub>    | $_{34} > 2.7$                         | '00 pc/h?            | Tyes   ✓ No                            |                   |                                    |  |
| Is $V_3$ or $V_{av34} > 1.5$   | * V <sub>12</sub> /2 | s 🗆 No                 |                        |   | Is V <sub>3</sub> or V <sub>av3</sub>    | <sub>34</sub> > 1.5                   | * V <sub>12</sub> /2 | Tyes  ✓ No                             |                   |                                    |  |
| If Yes,V <sub>12a</sub> =  | pc/h                 | (Equation 25           | -8)                    |   | If Yes,V <sub>12a</sub> =                |                                       | ŗ                    | oc/h (Equation                         | 25-18)            |                                    |  |
| Capacity Ch  | ecks                 |                        |                        |   | Capacity                                 | y Ch                                  | ecks                 |  |                   |                                    |  |
|  | Actual               | C                      | apacity                | LOS F?  |  |                                       | Actual               | Ca                                     | pacity            | LOS F                              |  |
|  |                      |                        |                        |   | V <sub>F</sub>                           |                                       | 6038                 | Exhibit 25-1                           | 4 6780            | No                                 |  |
| V <sub>FO</sub>  |                      | Exhibit 25-7           |                        |   | $V_{FO} = V_{F}$                         | - V <sub>R</sub>                      | 4863                 | Exhibit 25-1                           | 4 6780            | No                                 |  |
| 10   |                      |                        |                        |   | V <sub>R</sub>                           |                                       | 1175                 | Exhibit 25-3                           | 3 2100            | No                                 |  |
| Flow Enterin   | na Merce In          | ofluence A             | ro2                    |   | <del></del>                              | torir                                 |                      | rge Influen                            |                   | 1                                  |  |
| i iow Entern   | Actual               | 1                      | Desirable              | Violation?  | i-iow eli                                |                                       | Actual               | Max Desiral                            |                   | Violation                          |  |
| V <sub>R12</sub>   | , iotaai             | Exhibit 25-7           | D CONTRACTO            | violation:  | V <sub>12</sub>                          | _                                     | 3874                 | Exhibit 25-14                          | 4400:All          | No                                 |  |
| Level of Service Determination (if not F)                            |                      |                        |                        |   |  |                                       |                      | eterminatio                            |                   |                                    |  |
| $D_{R} = 5.475 + 0$  |                      |                        |                        |   |  |                                       |                      | ).0086 V <sub>12</sub> - 0.            | -                 | ,                                  |  |
| $D_R = 3.473 + C$ $D_R = (pc/m)$                                     |                      | 0.0070 V <sub>12</sub> | 0.00021 L <sub>A</sub> |   |  | • • •                                 | /mi/ln)              | 12 - 0.                                | _D                |                                    |  |
| **   | oit 25-4)            |                        |                        |   | 1 ***                                    |                                       | bit 25-4)            |  |                   |                                    |  |
| Speed Deter  |                      |                        |                        |   | Speed D                                  | •                                     |                      |  |                   |                                    |  |
|  |                      |                        |                        |   |  |                                       |                      |  |                   |                                    |  |
| M <sub>S</sub> = (Exibit 2   |                      |                        |                        |   | 1. "                                     | ,                                     | xhibit 25            | *                                      |                   |                                    |  |
|  | hibit 25-19)         |                        |                        |   | 1  | -                                     | (Exhibit             |  |                   |                                    |  |
| $S_0 = mph (Ex$  | hibit 25-19)         |                        |                        |   | $S_0 = 56.9 \text{ mph (Exhibit 25-19)}$ |                                       |                      |  |                   |                                    |  |
| S = mph (Exhibit 25-14)  |                      |                        |                        |   | S = 51                                   |                                       | (Exhibit             |  |                   |                                    |  |

|  | RAI                              | MPS AND I                     | KAMP JUNG                      | CHONS W                      | ORKSHE                              | <u>:EI</u>                       |                                      |                                     |                                      |  |  |  |
|--|----------------------------------|-------------------------------|--------------------------------|------------------------------|-------------------------------------|----------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|--|--|--|
| General Infor                                | mation                           |                               |                                | Site Infor                   | mation                              |                                  |                                      |                                     |                                      |  |  |  |
| Analyst                                      | SEB                              |                               | Fre                            | eeway/Dir of Tr              | avel                                | Southbound                       | -87                                  |                                     |                                      |  |  |  |
| gency or Company                             | CHA                              |                               | Ju                             | nction                       | Exit 4 SB On-Ramp                   |                                  |                                      |                                     |                                      |  |  |  |
| ate Performed                                | 9/08/                            | 2011                          | Ju                             | risdiction                   | 1                                   | NYSDOT                           |                                      |                                     |                                      |  |  |  |
| analysis Time Period                         | AM                               |                               | An                             | alysis Year                  | 2                                   | 2009 Existing                    | I                                    |                                     |                                      |  |  |  |
| roject Description                           | Exit 4                           |                               |                                |                              |                                     |                                  |                                      |                                     |                                      |  |  |  |
| nputs  |                                  |                               |                                |                              |                                     |                                  |                                      |                                     |                                      |  |  |  |
| pstream Adj Ramp                             |                                  | Terrain: Level                |                                |                              |                                     |                                  |                                      | Downstro<br>Ramp                    | eam Adj                              |  |  |  |
| Yes On                                       |                                  |                               |                                |                              |                                     |                                  |                                      | ☐ Yes                               | □ On                                 |  |  |  |
| ■ No ■ Off                                   | :                                |                               |                                |                              |                                     |                                  |                                      | ✓ No                                | ☐ Off                                |  |  |  |
| up = 2035                                    | ft                               |                               |                                |                              |                                     |                                  |                                      | L <sub>down</sub> =                 | ft                                   |  |  |  |
|  |                                  | S                             | $_{\rm F} = 56.0 \; {\rm mph}$ |                              | $S_{FR} = 4$                        | 0.0 mph                          |                                      | V <sub>D</sub> =                    | veh/h                                |  |  |  |
| u' = 490  Ve                                 | eh/h                             |                               | Sketch (s                      | show lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$                 |                                  |                                      | V <sub>D</sub> –                    | ven/n                                |  |  |  |
| Conversion to                                | pc/h Und                         | der Base C                    | onditions                      |                              |                                     |                                  |                                      |                                     |                                      |  |  |  |
| (pc/h)                                       | V<br>(Veh/hr)                    | PHF                           | Terrain                        | %Truck                       | %Rv                                 | f <sub>HV</sub>                  | f <sub>p</sub>                       | v = V/PH                            | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |  |
| reeway                                       | 4600                             | 0.92                          | Level                          | 2                            | 0                                   | 0.990                            | 1.00                                 |                                     | 5050                                 |  |  |  |
| Ramp   | 540                              | 0.93                          | Level                          | 5                            | 0                                   | 0.976                            | 1.00                                 |                                     | 595                                  |  |  |  |
| JpStream                                     | 490                              | 0.93                          | Level                          | 3                            | 0                                   | 0.985                            | 1.00                                 |                                     | 535                                  |  |  |  |
| DownStream                                   |                                  | 1                             |                                |                              | 1                                   | 1                                |                                      |                                     |                                      |  |  |  |
|  |                                  | Merge Areas                   |                                |                              |                                     |                                  | Diverge Ar                           | eas                                 |                                      |  |  |  |
| stimation of                                 | v <sub>12</sub>                  |                               |                                |                              | Estimati                            | ion of v <sub>1</sub>            | 2                                    |                                     |                                      |  |  |  |
|  | V <sub>12</sub> = V <sub>F</sub> | (P.,,)                        |                                |                              | 1                                   |                                  |                                      | \/ \D                               |                                      |  |  |  |
| _  | 12 1                             | ation 25-2 or                 | 25-2\                          |                              |                                     | V <sub>1</sub>                   | $_2 = V_R + (V_F)$                   |                                     |                                      |  |  |  |
| EQ =   |                                  |                               |                                |                              | L <sub>EQ</sub> =                   |                                  | (Equation                            | n 25-8 or 25-                       | ·9)                                  |  |  |  |
| FM =   |                                  |                               | on (Exhibit 25-5)              |                              | P <sub>FD</sub> =                   |                                  | using Eq                             | uation (Exhibi                      | t 25-12)                             |  |  |  |
| 12 =   | 3044                             |                               |                                |                              | V <sub>12</sub> =                   |                                  | pc/h                                 |                                     |                                      |  |  |  |
| or V <sub>av34</sub>                         |                                  | pc/h (Equatio                 | n 25-4 or 25-                  |                              | V <sub>3</sub> or V <sub>av34</sub> |                                  | pc/h (Equa                           | tion 25-15 or 2                     | 5-16)                                |  |  |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,70 | 5)                               | - M N-                        |                                |                              |                                     | $_{\rm A} > 2,700  \rm pc$       | /h? ☐ Yes ☐                          | No                                  |                                      |  |  |  |
|  |                                  |                               |                                |                              |                                     | •                                | <sup>12</sup>                        |                                     |                                      |  |  |  |
| s $V_3$ or $V_{av34} > 1.5$ *                | · <del>-</del>                   |                               |                                |                              | If Yes, V <sub>12a</sub> =          |                                  |                                      | uation 25-18                        | ١                                    |  |  |  |
| Yes,V <sub>12a</sub> =                       |                                  | (Equation 25-                 | 8)                             |                              | 120                                 |                                  |                                      | Janon 25-10                         | /                                    |  |  |  |
| Capacity Che                                 | cks                              |                               |                                |                              | Capacity                            | y Checks                         | <u> </u>                             |                                     |                                      |  |  |  |
|  | Actual                           | Ca                            | pacity                         | LOS F?                       |                                     | Ac                               | tual                                 | Capacity                            | LOS F                                |  |  |  |
|  |                                  |                               |                                |                              | $V_{F}$                             |                                  | Exhibit                              | 25-14                               |                                      |  |  |  |
| $V_{FO}$                                     | 5645                             | Exhibit 25-7                  |                                | No                           | $V_{FO} = V_{F}$                    | - V <sub>D</sub>                 | Exhibit                              | 25-14                               |                                      |  |  |  |
| 10   |                                  |                               |                                |                              | V <sub>R</sub>                      |                                  |                                      | 25-3                                |                                      |  |  |  |
| low Entoring                                 | Morae In                         | fluoroo A                     | ·                              | ļ                            | <del></del>                         | toring D                         | iverge Infl                          |                                     |                                      |  |  |  |
| low Entering                                 |                                  | 1                             |                                | Violation?                   | FIOW EII                            |                                  |                                      |                                     | Violation                            |  |  |  |
| V  | Actual                           |                               | esirable                       | Violation?                   | \/                                  | Actual                           | 1                                    | Desirable<br>14                     | violation                            |  |  |  |
| V <sub>R12</sub>                             | 3639                             | Exhibit 25-7                  | 4600:All                       | No                           | V <sub>12</sub>                     |                                  | Exhibit 25-                          |                                     | - ( <b>5</b> )                       |  |  |  |
| evel of Serv                                 |                                  | <u>-</u>                      |                                |                              |                                     |                                  | Determina                            |                                     | ot F)                                |  |  |  |
|  |                                  | 0.0078 V <sub>12</sub> - 0.00 | 1627 L <sub>A</sub>            |                              |                                     | $O_{R} = 4.252$                  | + 0.0086 V <sub>1</sub>              | <sub>2</sub> - 0.009 L <sub>D</sub> |                                      |  |  |  |
| <sub>R</sub> = 27.9 (pc                      | /mi/ln)                          |                               |                                |                              | $D_R = (p$                          | c/mi/ln)                         |                                      |                                     |                                      |  |  |  |
| OS = C (Exhib                                | oit 25-4)                        |                               |                                |                              | LOS = (E                            | xhibit 25-4                      | .)                                   |                                     |                                      |  |  |  |
| Speed Detern                                 | nination                         |                               |                                |                              | Speed D                             | Petermin                         | ation                                |                                     |                                      |  |  |  |
| l <sub>S</sub> = 0.397 (Exil                 |                                  | <del></del>                   | xhibit 25-19)                  |                              |                                     |                                  |                                      |                                     |                                      |  |  |  |
| U.39/(EXII                                   |                                  |                               |                                | ; <sub>-</sub> 10)           |                                     |                                  |                                      |                                     |                                      |  |  |  |
| -  | R= 50.4 mph (Exhibit 25-19)      |                               |                                |                              |                                     |                                  | S <sub>R</sub> = mph (Exhibit 25-19) |                                     |                                      |  |  |  |
| 5 <sub>R</sub> = 50.4 mph (                  |                                  |                               |                                |                              | c                                   | . /=                             | 10\                                  |                                     |                                      |  |  |  |
| $t_{R}$ = 50.4 mph ( $t_{0}$ = 50.6 mph (    | Exhibit 25-19) Exhibit 25-14)    |                               |                                |                              |                                     | oh (Exhibit 25<br>oh (Exhibit 25 |                                      |                                     |                                      |  |  |  |

|  | 11/71                        | III O AILD                           | RAMP JUNG                | <del></del>   | <u> </u>                              |   |                   |                                      |                                       |  |  |  |
|--|------------------------------|--------------------------------------|--------------------------|---|---------------------------------------|---|-------------------|--------------------------------------|---------------------------------------|--|--|--|
| General Info   | rmation                      |                                      |                          | Site Infor  | mation                                |   |                   |                                      |                                       |  |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio  | 9/08/                        | 2011                                 | Ju<br>Ju                 | eeway/Dir of Tr<br>nction<br>risdiction<br>nalysis Year | E<br>N                                | Southbound I-6<br>Exit 5 SB On-F<br>NYSDOT<br>2009 Existing |                   |                                      |                                       |  |  |  |
| Project Description  |                              |                                      |                          |   |                                       | <u> </u>  |                   |                                      |                                       |  |  |  |
| nputs  |                              |                                      |                          |   |                                       |   |                   |                                      |                                       |  |  |  |
| Jpstream Adj Ramp  |                              | Terrain: Level                       |                          |   |                                       |   |                   | Downstr<br>Ramp                      | eam Adj                               |  |  |  |
| Yes O  |                              |                                      |                          |   |                                       |   |                   | ✓ Yes                                | ✓ On                                  |  |  |  |
| ™ No □ O   | ff                           |                                      |                          |   |                                       |   |                   | □ No                                 | ☐ Off                                 |  |  |  |
| <sub>-up</sub> = ft  |                              | S                                    | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 40                  | 0.0 mph   |                   | L <sub>down</sub> =                  | 2035 ft                               |  |  |  |
| $l_{\rm u} = {\rm veh/l}$  | า                            |                                      | Sketch (s                | show lanes, L <sub>A</sub> ,                            | $L_{D'}V_{R'}V_{f}$                   |   |                   | $V_D =$                              | 540 <b>veh/h</b>                      |  |  |  |
| Conversion t   | to pc/h Und                  | der Base C                           | Conditions               |   |                                       |   |                   |                                      |                                       |  |  |  |
| (pc/h)   | V<br>(Veh/hr)                | PHF                                  | Terrain                  | %Truck  | %Rv                                   | f <sub>HV</sub>   | f <sub>p</sub>    | v = V/PH                             | IF x f <sub>HV</sub> x f <sub>p</sub> |  |  |  |
| Freeway  | 4400                         | 0.92                                 | Level                    | 2   | 0                                     | 0.990   | 1.00              |                                      | 4830                                  |  |  |  |
| Ramp   | 490                          | 0.93                                 | Level                    | 3   | 0                                     | 0.985   | 1.00              |                                      | 535                                   |  |  |  |
| UpStream   | F 40                         | 0.00                                 | 1 1                      |   |                                       | 0.07/   | 1.00              | 505                                  |                                       |  |  |  |
| DownStream   | 540                          | 0.93 Merge Areas                     | Level                    | 5   | 0                                     | 0.976   | 1.00<br>Diverge A | roac                                 | 595                                   |  |  |  |
| Estimation of v <sub>12</sub> Estimation o   |                              |                                      |                          |   |                                       | on of v   |                   | 1642                                 |                                       |  |  |  |
|  |                              | (D )                                 |                          |   |                                       |   |                   |                                      |                                       |  |  |  |
|  | $V_{12} = V_F$               |                                      | 05.0)                    |   |                                       | V <sub>12</sub>   | $= V_R + (V_F)$   | V <sub>R</sub> )P <sub>FD</sub>      |                                       |  |  |  |
| -EQ =  | -                            | ation 25-2 or                        |                          |   | L <sub>EQ</sub> =                     |   | (Equatio          | n 25-8 or 25                         | -9)                                   |  |  |  |
| P <sub>FM</sub> =  |                              |                                      | on (Exhibit 25-5)        |   | P <sub>FD</sub> =                     |   | using Ed          | quation (Exhib                       | it 25-12)                             |  |  |  |
| / <sub>12</sub> =  | 2911                         |                                      |                          |   | V <sub>12</sub> =                     |   | pc/h              |                                      |                                       |  |  |  |
| 7 <sub>3</sub> or V <sub>av34</sub>  | 1919 <sub> </sub><br>5)      | pc/h (Equatio                        | n 25-4 or 25-            |   | $V_3$ or $V_{av34}$                   |   | pc/h (Equ         | ation 25-15 or 2                     | 5-16)                                 |  |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7   | ,                            | s 🔽 No                               |                          |   | Is V <sub>3</sub> or V <sub>av3</sub> | 4 > 2,700 pc/h  | ?                 | No                                   |                                       |  |  |  |
| Is $V_3$ or $V_{av34} > 1.5$   |                              |                                      |                          |   | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>4</sub> > 1.5 * V <sub>12</sub> /2                     | ☐ Yes ☐           | No                                   |                                       |  |  |  |
| Yes,V <sub>12a</sub> =   | ·=                           | (Equation 25                         | -8)                      |   | If Yes,V <sub>12a</sub> =             |   | pc/h (Eq          | uation 25-18                         | )                                     |  |  |  |
| Capacity Che   |                              | (Equation 25                         | <u> </u>                 |   | 120                                   | Checks  |                   |                                      |                                       |  |  |  |
| Sapacity One   | Actual                       | T C:                                 | npacity                  | LOS F?  | Сараспу                               | Actu  | al                | Capacity                             | LOS F                                 |  |  |  |
|  | Actual                       |                                      | ipacity                  | LOST:   | V <sub>F</sub>                        | Acto  |                   | it 25-14                             | 1001                                  |  |  |  |
| V  | E24E                         | Evhibit 25 7                         |                          | No  |                                       | . V   |                   |                                      |                                       |  |  |  |
| $V_{FO}$   | 5365                         | Exhibit 25-7                         |                          | No  | $V_{FO} = V_F$                        | V R   | _                 | it 25-14                             | _                                     |  |  |  |
|  | <u> </u>                     | <u> </u>                             |                          |   | V <sub>R</sub>                        |   |                   | it 25-3                              |                                       |  |  |  |
| Flow Enterin   |                              |                                      |                          | Lyrun   | Flow En                               |   |                   | luence Ar                            |                                       |  |  |  |
| \/   | Actual                       | 1                                    | Desirable                | Violation?  | \/                                    | Actual  | _                 | Desirable                            | Violation?                            |  |  |  |
| V <sub>R12</sub> 3446 Exhibit 25-7 4600:All No V <sub>12</sub> Exhibit 25-7 Evel of Service Determination (if not F) |                              |                                      |                          |   |                                       |   |                   |                                      |                                       |  |  |  |
|  |                              |                                      |                          |   |                                       |   |                   |                                      | ot F)                                 |  |  |  |
|  | - 0.00734 v <sub>R</sub> + 0 | אנטט.ט. V <sub>12</sub> - 0.0        | UOZ/ LA                  |   |                                       |   | - 0.0086 V        | <sub>12</sub> - 0.009 L <sub>D</sub> |                                       |  |  |  |
| $O_{R} = 26.5 \text{ (p)}$   | -                            |                                      |                          |   |                                       | c/mi/ln)  |                   |                                      |                                       |  |  |  |
|  | bit 25-4)                    |                                      |                          |   |                                       | xhibit 25-4)  |                   |                                      |                                       |  |  |  |
| Speed Deter  | mination                     |                                      |                          |   | <del>' '</del>                        | etermina  | tion              |                                      |                                       |  |  |  |
| $M_{\rm S} = 0.371  (Ex$   | ibit 25-19)                  |                                      |                          |   | $D_s = (Exhibit 25-19)$               |   |                   |                                      |                                       |  |  |  |
|  |                              | S <sub>R</sub> = mph (Exhibit 25-19) |                          |   |                                       |   |                   |                                      |                                       |  |  |  |
| $S_R = 50.8 \text{ mph}$   | ,                            |                                      |                          |   | S <sub>0</sub> = mph (Exhibit 25-19)  |   |                   |                                      |                                       |  |  |  |
|  | (Exhibit 25-19)              |                                      |                          |   | $S_0 = mp$                            | h (Exhibit 25-  | 19)               |                                      |                                       |  |  |  |

|   |   |                            | FREEWA                | Y WEAV   | ING WOR                                       | KSHEE  | Τ              |                 |              |
|---|---|----------------------------|-----------------------|--|---|--|----------------|-----------------|--------------|
| Genera  | Informat  | ion                        |                       |  | Site Info                                     | rmation  |                |                 |              |
| Analyst SEB Agency/Company CHA Date Performed 9/08/2011 Analysis Time Period AM |   |                            |                       | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location                                      | I-87 Northbound<br>Exit 2E on to 2W off<br>NYSDOT<br>2009 Existing |                |                 |              |
| Inputs  |   |                            |                       |  | 1   |  |                |                 |              |
| Weaving nu<br>Weaving se<br>Terrain   | e-flow speed, and mber of lanes, g length, L (ft) | N                          | 56<br>4<br>815<br>Lev | el   | Weaving type<br>Volume ratio<br>Weaving ratio | , VR   |                | A<br>0.:<br>0.: |              |
| Conver  | sions to p  | c/h Unde                   | er Base C             | ondition   |   |  | •              |                 | _            |
| (pc/h)  | V   | PHF                        | Truck %               | RV %   | E <sub>T</sub>                                | E <sub>R</sub>   | $f_{HV}$       | fp              | V            |
| $V_{o1}$  | 2320  | 0.92                       | 2                     | 0  | 1.5   | 1.2  | 0.990          | 1.00            | 2546         |
| $V_{o2}$  | 0   | 0.92                       | 2                     | 0  | 1.5   | 1.2  | 0.990          | 1.00            | 0            |
| V <sub>w1</sub>   | 690   | 0.92                       | 2                     | 0  | 1.5   | 1.2  | 0.990          | 1.00            | 757          |
| $V_{w2}$  | 330   | 0.92                       | 2                     | 0  | 1.5   | 1.2  | 0.990          | 1.00            | 362          |
| V <sub>w</sub>  |   | •                          | •                     | 1119   | $V_{nw}$                                      |  | •              | •               | 2546         |
| V   | 1   |                            |                       |  | ,   | ı  |                |                 | 3665         |
| Weavin  | g and No  | n-Weavin                   | g Speeds              | S  |   |  |                |                 |              |
|   |   |                            | Unconstr              |  |   |  |                | trained         |              |
| a /Fubibit 2  | 1.()  | Weaving                    | (i = w)               | Non-Wea  | ving (i = nw)                                 | :  | ng (i = w)     | i e             | ving ( = nw) |
| a (Exhibit 24<br>b (Exhibit 24  |   | <u> </u>                   |                       |  |   | 0.35<br>2.20   |                | 0.0020<br>4.00  |              |
| c (Exhibit 24   |   |                            |                       |  |   | 0.97   |                | 1.30            |              |
| d (Exhibit 2  |   |                            |                       |  |   | 0.80   |                | 0.75            |              |
| Weaving intens  |   |                            |                       |  |   | 2.20   |                | 0.27            |              |
| Weaving and no<br>speeds, Si (mi/h  |   |                            |                       |  |   | 29.36 5  |                |                 | .22          |
| Number of I<br>Maximum n  | anes required<br>umber of lanes<br>If Nw < Nw     | s, Nw (max)                | ·                     |  | 1.46<br>1.40                                  | if Nw > Nv   | v (max) constr | rained operati  | ion          |
|   |   |                            |                       | Level o  | f Service,                                    | and Cap  | acity          |                 |              |
|   | gment speed,                                      |                            |                       | 41.74  |   |  |                |                 |              |
|   | gment density,                                    | , D (pc/mi/ln)             |                       | 21.95  |   |  |                |                 |              |
| Level of ser  | vice, LOS   |                            |                       | С  |   |  |                |                 |              |
| Capacity of   | base condition                                    | n, c <sub>b</sub> (pc/h)   |                       | 6158   |   |  |                |                 |              |
| Capacity as   | a 15-minute fl                                    | ow rate, c (vel            | n/h)                  | 6097   |   |  |                |                 |              |
| Capacity as   | a full-hour vol                                   | ume, c <sub>h</sub> (veh/h | 1)                    | 5609   |   |  |                |                 |              |
| Notes   |   |                            |                       |  |   |  |                |                 |              |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|   |   |                            | FREEWA                | Y WEAV   | ING WOR                                       | KSHEE  | Τ               |                |              |
|---|---|----------------------------|-----------------------|--|---|--|-----------------|----------------|--------------|
| General   | Informat  | ion                        |                       |  | Site Info                                     | rmation  |                 |                |              |
| Analyst SEB Agency/Company CHA Date Performed 9/08/2011 Analysis Time Period AM |   |                            |                       | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location                                      | I-87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2009 Existing |                 | ff             |              |
| Inputs  |   |                            |                       |  |   |  |                 |                |              |
| Weaving nur<br>Weaving seg<br>Terrain   | e-flow speed, s<br>mber of lanes,<br>g length, L (ft) | Ň                          | 56<br>4<br>810<br>Lev | el   | Weaving type<br>Volume ratio<br>Weaving ratio | , VR   |                 | A<br>0.<br>0.: |              |
| Convers   | sions to p  | c/h Unde                   | er Base C             | ondition   |   | r  | 1               | 1              |              |
| (pc/h)  | V   | PHF                        | Truck %               | RV %   | E <sub>T</sub>                                | E <sub>R</sub>   | f <sub>HV</sub> | fp             | V            |
| $V_{o1}$  | 3680  | 0.92                       | 2                     | 0  | 1.5   | 1.2  | 0.990           | 1.00           | 4039         |
| $V_{02}$  | 0   | 0.92                       | 2                     | 0  | 1.5   | 1.2  | 0.990           | 1.00           | 0            |
| V <sub>w1</sub>   | 570   | 0.92                       | 2                     | 0  | 1.5   | 1.2  | 0.990           | 1.00           | 625          |
| $V_{w2}$  | 310   | 0.92                       | 2                     | 0  | 1.5   | 1.2  | 0.990           | 1.00           | 340          |
| $V_{_{\mathrm{W}}}$   |   | •                          | •                     | 965  | $V_{nw}$                                      |  | •               | •              | 4039         |
| V   | 1   |                            |                       |  | ,   | ı  |                 |                | 5004         |
| Weaving   | g and No  | n-Weavin                   | g Speeds              | 3  |   |  |                 |                |              |
|   |   |                            | Unconstr              | 4  |   |  |                 | trained        |              |
| a /Fubibit 24   | ()  | Weaving                    |                       |  | ving (i = nw)                                 | Weavir   | ng (i = w)      | Non-Wea        | ving ( = nw) |
| a (Exhibit 24<br>b (Exhibit 24  |   | 0.15<br>2.20               |                       |  | .00   |  |                 |                |              |
| c (Exhibit 24   |   | 0.97                       |                       |  | .30   |  |                 |                |              |
| d (Exhibit 24   |   | 0.80                       |                       |  | 0.75  |  |                 |                |              |
| Weaving intensit  |   | 1.05                       | )                     | 0.   | 0.50  |  |                 |                |              |
| Weaving and no<br>speeds, Si (mi/h)   |   | 37.4                       | 1                     | 45   | 5.75  |  |                 |                |              |
| Number of la<br>Maximum nu  | anes required a<br>umber of lanes                     |                            |                       |  | 1.13<br>1.40                                  |  |                 |                |              |
|   |   | (max) uncons               |                       |  |   |  | v (max) constr  | rained operati | ion          |
|   |   |                            |                       |  | f Service,                                    | and Cap  | acity           |                |              |
|   |   |                            |                       | 43.86  |   |  |                 |                |              |
| Weaving segment density, D (pc/mi/ln)   |   |                            | 28.52<br>D            |  |   |  |                 |                |              |
| Level of service, LOS  Capacity of base condition, c <sub>h</sub> (pc/h)        |   |                            | 6776                  |  |   |  |                 |                |              |
|   |   | ow rate, c (vel            | n/h)                  | 6709   |   |  |                 |                |              |
|   |   | ume, c <sub>h</sub> (veh/h |                       | 6172   |   |  |                 |                |              |
| Notes   | a rail flour voi                                      | unio, oh (vonin            | ''                    | 0172   |   |  |                 |                |              |
| hanres  |   |                            |                       |  |   |  |                 |                |              |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

# **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mi/h) Free-Flow Spred <u>FFS = 75 midt</u> 70 midt 0 65 miih 60 midt 60 55 mish 50 30 400 00S1200 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, V <sub>n</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | V <sub>B</sub> , S, D |

| General Information                         |                          |          | Site Information                                      |           |                                |
|---|--------------------------|----------|---|-----------|--------------------------------|
| Analyst                                     | SEB                      |          | Highway/Direction of Travel                           | Northbo   | und I-87                       |
| Agency or Company                           | CHA                      |          | From/To   | Exit 2 to | Exit 4                         |
| Date Performed                              | 9/08/2011                |          | Jurisdiction  | NYSDO     | T                              |
| Analysis Time Period                        | PM                       |          | Analysis Year   | 2009 - E  | Existing                       |
| Project Description Exit 4                  |                          |          |   |           |                                |
| ✓ Oper.(LOS)                                | )                        |          | Des.(N)   | □ Pla     | nning Data                     |
| Flow Inputs                                 | 5100                     |          |   |           |                                |
| Volume, V                                   | 5100                     | veh/h    | Peak-Hour Factor, PHF                                 | 0.86      |                                |
| AADT  |                          | veh/day  | %Trucks and Buses, P <sub>T</sub>                     | 2         |                                |
| Peak-Hr Prop. of AADT, K                    |                          |          | %RVs, P <sub>R</sub>                                  | 0         |                                |
| Peak-Hr Direction Prop, D                   |                          |          | General Terrain:                                      | Level     |                                |
| DDHV = AADT x K x D  Driver type adjustment | 1.00                     | veh/h    | Grade % Length  | mi        |                                |
| Calculate Flow Adjusti                      |                          |          | Up/Down %   |           |                                |
| f <sub>p</sub>                              | 1.00                     |          | E <sub>R</sub>  | 1.2       |                                |
|   |                          |          |   |           |                                |
| E <sub>T</sub>                              | 1.5                      |          | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$          | 0.990     |                                |
| Speed Inputs                                |                          |          | Calc Speed Adj and FF                                 | <u>S</u>  |                                |
| _ane Width                                  | 12.0                     | ft       | $f_{LW}$  |           | mi/h                           |
| Rt-Shoulder Lat. Clearance                  | 6.0                      | ft       | f <sub>LC</sub>                                       |           | mi/h                           |
| nterchange Density                          | 0.50                     | I/mi     |   |           |                                |
| Number of Lanes, N                          | 3                        |          | f <sub>ID</sub>                                       |           | mi/h                           |
| FFS (measured)                              | 56.0                     | mi/h     | f <sub>N</sub>  |           | mi/h                           |
| Base free-flow Speed, BFFS                  |                          | mi/h     | FFS   | 56.0      | mi/h                           |
| LOS and Performance                         | Measures                 |          | Design (N)  |           |                                |
|   |                          |          | Design (N)  |           | ·                              |
| Operational (LOS)                           |                          |          | Design LOS  | 4         |                                |
| $V_{p} = (V \text{ or DDHV}) / (PHF x N)$   | x f <sub>HV</sub> x 1997 | pc/h/ln  | $v_p = (V \text{ or DDHV}) / (PHF \times N \times N)$ | f v       |                                |
| (p)   | 7007                     | ролли    | f )   | 'HV ^     | pc/h                           |
| 6   | 55.0                     | mi/h     | "p"   |           |                                |
| $D = v_p / S$                               | 36.3                     | pc/mi/ln | 5   |           | mi/h                           |
| os <sup>°</sup>                             | E                        | •        | $D = v_p / S$   |           | pc/mi/ln                       |
|   |                          |          | Required Number of Lanes, N                           |           |                                |
| Glossary                                    |                          | ······   | Factor Location                                       |           |                                |
| N - Number of lanes                         | S - Speed                |          | F - Evhihite23 9 22 10                                |           | f Evhibit 00 4                 |
| / - Hourly volume                           | D - Density              |          | E <sub>R</sub> - Exhibits 23-8, 23-10                 |           | f <sub>LW</sub> - Exhibit 23-4 |
| , - Flow rate                               | FFS - Free-flow          | speed    | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1           | 1         | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                       | BFFS - Base fre          | ·        | f <sub>p</sub> - Page 23-12                           |           | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho                |                          |          | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-            | 2, 23-3   | f <sub>ID</sub> - Exhibit 23-7 |
|   | -a. romino               |          |   |           |                                |

| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> , S, D |

|  | Flow Rate (pc/h/li            | n)       |   |   |   |
|--|-------------------------------|----------|---|---|---|
| General Information  |                               |          | Site Information  |   |   |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | SEB<br>CHA<br>9/08/2011<br>PM |          | Highway/Direction of Travel<br>From/To<br>Jurisdiction<br>Analysis Year   | Southbo<br>Exit 4 to<br>NYSDC<br>2009 - L | )T  |
| Project Description Exit 4   |                               |          |   |   |   |
| ✓ Oper.(LOS)   | <u> </u>                      |          | Des.(N)   | □ Pla                                     | anning Data   |
| <b>Flow Inputs</b><br>Volume, V  | 3750                          | veh/h    | Peak-Hour Factor, PHF   | 0.92                                      |   |
| AADT   | 0,00                          | veh/day  | %Trucks and Buses, P <sub>T</sub>   | 2   |   |
| Peak-Hr Prop. of AADT, K   |                               | <b>,</b> | %RVs, P <sub>R</sub>  | 0   |   |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D                       |                               | veh/h    | General Terrain: Grade % Length   | Level<br>mi                               |   |
| Driver type adjustment   | 1.00                          |          | Up/Down %   |   |   |
| Calculate Flow Adjusti   |                               |          |   |   |   |
| f <sub>p</sub>   | 1.00                          |          | E <sub>R</sub>  | 1.2                                       |   |
| E <sub>T</sub>   | 1.5                           |          | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$                              | 0.990                                     |   |
| Speed Inputs   |                               |          | Calc Speed Adj and FF   | S   |   |
| Lane Width   | 12.0                          | ft       | f <sub>LW</sub>   |   | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0                           | ft       |   |   |   |
| Interchange Density  | 0.50                          | I/mi     | f <sub>LC</sub>   |   | mi/h  |
| Number of Lanes, N   | 3                             |          | f <sub>ID</sub>   |   | mi/h  |
| FFS (measured)   | 56.0                          | mi/h     | f <sub>N</sub>  |   | mi/h  |
| Base free-flow Speed, BFFS   |                               | mi/h     | FFS   | 56.0                                      | mi/h  |
| LOS and Performance  | Measures                      |          | Design (N)  |   |   |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N           | x f y                         |          | Design (N)<br>Design LOS  |   |   |
| f <sub>p</sub> )   | 13/2                          | pc/h/ln  | $v_p = (V \text{ or DDHV}) / (PHF x N x f_p)$                             | cf <sub>HV</sub> x                        | pc/h  |
| S / C  | 56.0                          | mi/h     | S   |   | mi/h  |
| $D = v_p / S$  | 24.5                          | pc/mi/ln | $D = v_p / S$   |   | pc/mi/ln  |
| LOS  | С                             |          | Required Number of Lanes, N   | İ   | p 3   |
| Glossary   |                               |          | Factor Location   |   |   |
| N - Number of lanes  | S - Speed                     |          |   |   |   |
| V - Hourly volume  | D - Density                   |          | E <sub>R</sub> - Exhibits23-8, 23-10                                      |   | f <sub>LW</sub> - Exhibit 23-4                                  |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow               | v speed  | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1                               | 11  | f <sub>LC</sub> - Exhibit 23-5                                  |
| LOS - Level of service<br>DDHV - Directional design ho                 | BFFS - Base fro               |          | f <sub>p</sub> - Page 23-12<br>LOS, S, FFS, v <sub>p</sub> - Exhibits 23- | 2, 23-3                                   | f <sub>N</sub> - Exhibit 23-6<br>f <sub>ID</sub> - Exhibit 23-7 |
| ווסכייייייייייייייייייייייייייייייייייי                                | ui voiuitie                   |          |   |   |   |

## **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mith) Froe-Flow Speed FFS = 75 midt 70 mich 70 65 midt 60 mish 60 55 min 30 400 0080 1200 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> , S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (N)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>o</sub> , S, D |

| General Information                          |                             |               | Site Information                                      |          |                                 |
|--|-----------------------------|---------------|---|----------|---------------------------------|
| Analyst                                      | OCD.                        |               | Site Information                                      | A        |                                 |
| Agency or Company                            | SEB<br>CHA                  |               | Highway/Direction of Travel                           |          | ound I-87                       |
| Date Performed                               | 9/09/2011                   |               | From/To Jurisdiction                                  |          | ff to Exit 4 on                 |
| Analysis Time Period                         | 9/09/2011<br>PM             |               | Analysis Year   | NYSDO    |                                 |
| Project Description Exit 4                   | T IVI                       |               | Allalysis real  | 2009 - E | Exisurig                        |
| ✓ Oper.(LOS)                                 |                             |               | Des.(N)   | PI:      | anning Data                     |
| Flow Inputs                                  |                             |               | 500.(14)  | s 1 IC   | aning Data                      |
| Volume, V                                    | 4500                        | veh/h         | Peak-Hour Factor, PHF                                 | 0.86     |                                 |
| AADT   |                             | veh/day       | %Trucks and Buses, P <sub>T</sub>                     | 2        |                                 |
| Peak-Hr Prop. of AADT, K                     |                             |               | %RVs, P <sub>R</sub>                                  | 0        |                                 |
| Peak-Hr Direction Prop, D                    |                             |               | General Terrain:                                      | Level    |                                 |
| $DDHV = AADT \times K \times D$              |                             | veh/h         | Grade % Length  | mi       |                                 |
| Driver type adjustment                       | 1.00                        |               | Up/Down %   |          |                                 |
| Calculate Flow Adjustr                       | nents                       |               |   |          |                                 |
| $f_p$  | 1.00                        |               | $E_R$   | 1.2      |                                 |
| E <sub>T</sub>                               | 1.5                         |               | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$          | 0.990    |                                 |
| Speed Inputs                                 |                             |               | Calc Speed Adj and FF                                 | S        |                                 |
| Lane Width                                   | 12.0                        | ft            | f <sub>LW</sub>                                       |          | mi/h                            |
| Rt-Shoulder Lat. Clearance                   | 6.0                         | ft            |   |          |                                 |
| Interchange Density                          | 0.50                        | l/mi          | f <sub>LC</sub>                                       |          | mi/h                            |
| Number of Lanes, N                           | 3                           |               | f <sub>ID</sub>                                       |          | mi/h                            |
| FFS (measured)                               | 56.0                        | mi/h          | f <sub>N</sub>  |          | mi/h                            |
| Base free-flow Speed, BFFS                   |                             | mi/h          | FFS   | 56.0     | mi/h                            |
| LOS and Performance                          | Measures                    |               | Design (N)  |          |                                 |
| Operational (LOC)                            |                             |               | Design (N)  |          |                                 |
| Operational (LOS)                            | •                           |               | Design LOS  |          |                                 |
| $v_p = (V \text{ or DDHV}) / (PHF \times N)$ | х т <sub>НV</sub> х<br>1762 | pc/h/ln       | $v_p = (V \text{ or DDHV}) / (PHF \times N \times N)$ | fx       |                                 |
| f <sub>p</sub> )                             |                             | <b>P</b> 2    | l r   | . HV .   | pc/h                            |
| S  | 56.0                        | mi/h          | f <sub>p</sub> )<br>S                                 |          | : <i>h</i> -                    |
| $D = v_p / S$                                | 31.5                        | pc/mi/ln      | <b>1</b>  |          | mi/h                            |
| LOS  | D                           |               | D = v <sub>p</sub> / S                                |          | pc/mi/ln                        |
| Gloccom                                      |                             |               | Required Number of Lanes, N                           |          |                                 |
| Glossary                                     | C Ct                        |               | Factor Location                                       |          |                                 |
| N - Number of lanes                          | S - Speed                   |               | E <sub>R</sub> - Exhibits23-8, 23-10                  |          | f <sub>I W</sub> - Exhibit 23-4 |
| V - Hourly volume                            | D - Density                 |               | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1           | 1        | $f_{LC}$ - Exhibit 23-5         |
| v <sub>p</sub> - Flow rate                   | FFS - Free-flov             | v speed       | f <sub>p</sub> - Page 23-12                           | •        | $f_N$ - Exhibit 23-6            |
| LOS - Level of service                       | BFFS - Base fr              | ee-flow speed | • •   | 2 22 2   |                                 |
| DDHV - Directional design ho                 | ur volume                   |               | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-            | ۷, ۷۵-۵  | f <sub>ID</sub> - Exhibit 23-7  |

# **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mith) FFS = 75 mids 70 mids F<u>roe-</u>Flow Spred 70 65 miih 60 midt 60 55 mith 40 30 400 800 1200 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> , S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>o</sub> , S, D |

| General Information                       |                         |  | Site Information  |          |   |
|---|-------------------------|--|---|----------|---|
| Analyst                                   | SEB                     |  | Highway/Direction of Travel   | Southbo  | und I-87  |
| Agency or Company                         | CHA                     |  | From/To   |          | to Exit 4 on                                    |
| Date Performed                            | 12/09/2011              |  | Jurisdiction  | NYSDO    | Τ   |
| Analysis Time Period                      | PM                      |  | Analysis Year   | 2009 - E | ixisting  |
| Project Description Exit 4                |                         |  |   |          |   |
| Oper.(LOS)                                |                         | ************************************** | Des.(N)   | □ Pla    | nning Data                                      |
| Flow Inputs                               |                         |  |   |          |   |
| Volume, V                                 | 2700                    | veh/h                                  | Peak-Hour Factor, PHF   | 0.92     |   |
| AADT                                      |                         | veh/day                                | %Trucks and Buses, P <sub>T</sub>   | 2        |   |
| Peak-Hr Prop. of AADT, K                  |                         |  | %RVs, P <sub>R</sub>  | 0        |   |
| Peak-Hr Direction Prop, D                 |                         |  | General Terrain:  | Level    |   |
| $DDHV = AADT \times K \times D$           |                         | veh/h                                  | Grade % Length  | mi       |   |
| Driver type adjustment                    | 1.00                    |  | Up/Down %   |          |   |
| Calculate Flow Adjustm                    |                         |  |   |          |   |
| $f_p$                                     | 1.00                    |  | $E_R$   | 1.2      |   |
| E <sub>T</sub>                            | 1.5                     |  | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$                              | 0.990    |   |
| Speed Inputs                              |                         |  | Calc Speed Adj and FF   | S        |   |
| Lane Width                                | 12.0                    | ft                                     | $f_LW$  |          | mi/h  |
| Rt-Shoulder Lat. Clearance                | 6.0                     | ft                                     | f <sub>LC</sub>   |          | mi/h  |
| Interchange Density                       | 0.50                    | l/mi                                   | i e   |          |   |
| Number of Lanes, N                        | 3                       |  | f <sub>ID</sub>   |          | mi/h  |
| FFS (measured)                            | 56.0                    | mi/h                                   | f <sub>N</sub>  |          | mi/h  |
| Base free-flow Speed, BFFS                |                         | mi/h                                   | FFS   | 56.0     | mi/h  |
| LOS and Performance I                     | Measures                |  | Design (N)  |          |   |
|   |                         | *****                                  | Design (N)  |          |   |
| Operational (LOS)                         |                         |  | Design LOS  |          |   |
| $v_p = (V \text{ or DDHV}) / (PHF x N x)$ | ( f <sub>HV</sub> x 988 | pc/h/ln                                | $v_p = (V \text{ or DDHV}) / (PHF \times N)$                              | v f. v   |   |
| $f_p$ )                                   | 900                     | ролин                                  | 1 '   | , ,HA ,  | pc/h  |
| S   | 56.0                    | mi/h                                   | $f_p$ )   |          | • 0   |
| D = v <sub>p</sub> / S                    | 17.6                    | pc/mi/ln                               | S   |          | mi/h  |
| LOS                                       | В                       | •                                      | $D = v_p / S$   |          | pc/mi/ln  |
|   |                         |  | Required Number of Lanes, N   | 1        |   |
| Glossary                                  |                         |  | Factor Location   |          |   |
| N - Number of lanes                       | S - Speed               |  | E <sub>R</sub> - Exhibits23-8, 23-10                                      |          | f <sub>LW</sub> - Exhibit 23-4                  |
| V - Hourly volume                         | D - Density             |  | · ''  | 11       |   |
| v <sub>p</sub> - Flow rate                | FFS - Free-flov         | v speed                                | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-                                | 1 (      | f <sub>LC</sub> - Exhibit 23-5                  |
| LOS - Level of service                    | BFFS - Base fr          | ee-flow speed                          | f <sub>p</sub> - Page 23-12<br>LOS, S, FFS, v <sub>p</sub> - Exhibits 23- |          | $f_N$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
|   |                         |  |   |          |   |

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# BASIC FREEWAY SEGMENTS WORKSHEET Application Operational (LOS) Design (N) Design (vp) Planning (LOS) Planning (N) 
| <u>Application</u>         | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, [             |
| Design (N)                 | FFS, LOS, V <sub>n</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> . S. D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | Vp. S. D              |

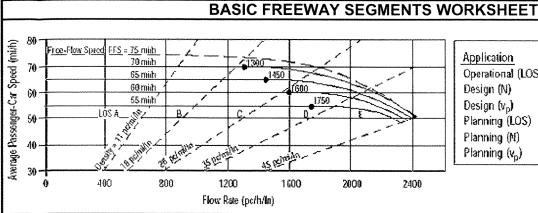
| General Information                              |                          |              | Site Information                             |           |                                |
|--|--------------------------|--------------|--|-----------|--------------------------------|
| Analyst  | SEB                      |              | Highway/Direction of Travel                  | Northbo   | und I-87                       |
| Agency or Company                                | CHA                      |              | From/To                                      | Exit 4 to | Exit 5                         |
| Date Performed                                   | 9/08/2011                |              | Jurisdiction                                 | NYSDO     | Τ                              |
| Analysis Time Period                             | PM                       |              | Analysis Year                                | 2009 - E  | Existing                       |
| Project Description Exit 4                       |                          |              |  |           |                                |
| Oper.(LOS)                                       |                          | 瓣            | Des.(N)                                      | ☐ Pla     | inning Data                    |
| Flow Inputs                                      |                          |              |  |           |                                |
| Volume, V  | 5800                     | veh/h        | Peak-Hour Factor, PHF                        | 0.86      |                                |
| AADT   |                          | veh/day      | %Trucks and Buses, $P_T$                     | 2         |                                |
| Peak-Hr Prop. of AADT, K                         |                          |              | %RVs, P <sub>R</sub>                         | 0         |                                |
| Peak-Hr Direction Prop, D                        |                          |              | General Terrain:                             | Level     |                                |
| DDHV = AADT x K x D                              | 1.00                     | veh/h        | Grade % Length                               | mi        |                                |
| Driver type adjustment<br>Calculate Flow Adjusti | 1.00                     |              | Up/Down %                                    |           |                                |
|  |                          |              |  |           |                                |
| f <sub>p</sub>                                   | 1.00                     |              | E <sub>R</sub>                               | 1.2       |                                |
| E <sub>T</sub>                                   | 1.5                      |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990     |                                |
| Speed Inputs                                     |                          |              | Calc Speed Adj and FF                        | S         |                                |
| ane Width  | 12.0                     | ft           | f <sub>LW</sub>                              | -         | mi/h                           |
| Rt-Shoulder Lat. Clearance                       | 6.0                      | ft           |  |           |                                |
| nterchange Density                               | 0.50                     | I/mi         | f <sub>LC</sub>                              |           | mi/h                           |
| Number of Lanes, N                               | 3                        |              | f <sub>ID</sub>                              |           | mi/h                           |
| FFS (measured)                                   | 56.0                     | mi/h         | f <sub>N</sub>                               |           | mi/h                           |
| Base free-flow Speed, BFFS                       |                          | mi/h         | FFS  | 56.0      | mi/h                           |
| OS and Performance                               | Measures                 |              | Design (N)                                   |           |                                |
|  |                          |              | Design (N)                                   |           |                                |
| Operational (LOS)                                |                          |              | Design LOS                                   |           |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$          | x f <sub>HV</sub> x 2271 | pc/h/ln      |  | , f       |                                |
| (p)  | 2211                     | рс/п/п       | $V_p = (V \text{ or DDHV}) / (PHF x N x)$    | ' 'HV X   | pc/h                           |
| <u> </u>   |                          | mi/h         | f <sub>p</sub> )                             |           | ·                              |
| $D = v_p / S$                                    |                          | pc/mi/ln     | S  |           | mi/h                           |
| _OS  | F                        | h 2000000    | $D = v_p / S$                                |           | pc/mi/ln                       |
|  | ,                        |              | Required Number of Lanes, N                  |           |                                |
| Glossary   |                          |              | Factor Location                              |           |                                |
| l - Number of lanes                              | S - Speed                |              | E Evhibita 22.0.02.40                        |           | £                              |
| / - Hourly volume                                | D - Density              |              | E <sub>R</sub> - Exhibits23-8, 23-10         |           | f <sub>LW</sub> - Exhibit 23-4 |
| , - Flow rate                                    | FFS - Free-flow          | v speed      | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1  | 1         | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                            | BFFS - Base fr           |              | f <sub>p</sub> - Page 23-12                  |           | f <sub>N</sub> - Exhibit 23-6  |
|  |                          | ee-now speed | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | 2, 23-3   | f <sub>ID</sub> - Exhibit 23-7 |
| DDHV - Directional design ho                     | our volume               |              |  |           |                                |

|  | BASIC F  | REEWAY SE        | EGMENTS W  | ORKSHEET   |   |   |
|--|--|------------------|--|--|---|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 65 mith 60 mi | B C C State of the | 1600 200         | 0 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v<br>FFS, LOS<br>FFS, N, A<br>FFS, LOS<br>FFS, LOS | , v <sub>p</sub> N, S, D<br>, N v <sub>p</sub> , S, D<br>ADT LOS, S, D<br>, AADT N, S, D          |
| General Information  | Flow Rate (pc/h/li   | 0)               | Site Inforn  | nation   |   |   |
| Analyst Agency or Company Date Performed   | SEB<br>CHA<br>9/08/2011  |                  |  | ction of Travel  | Southbou<br>Exit 5 to E<br>NYSDOT                                   |   |
| Analysis Time Period   | PM   |                  | Analysis Year  | ſ  | 2009 - Ex   | isting  |
| Project Description Exit 4  Oper.(LOS)   |  | Г                | Des.(N)  |  | ☐ Plan  | ning Data   |
| Flow Inputs  |  |                  |  |  |   | 9   |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K  | 2500   | veh/h<br>veh/day | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub>                                    | •  | 0.92<br>2<br>0  |   |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D<br>Driver type adjustment   | 1.00   | veh/h            | General Terra<br>Grade %   | ain:<br>Length<br>Up/Down %  | Level<br>mi   |   |
| Calculate Flow Adjustr   | nents  |                  |  |  |   |   |
| f <sub>p</sub>   | 1.00   |                  | E <sub>R</sub>   |  | 1.2   |   |
| E <sub>T</sub>   | 1.5  |                  |  | r - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990   |   |
| Speed Inputs   |  |                  | Calc Speed   | d Adj and FFS  | <u> </u>  |   |
| Lane Width   | 12.0   | ft               | ${\sf f}_{\sf LW}$   |  |   | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft<br>L/m;       | $f_LC$   |  |   | mi/h  |
| Interchange Density  | 0.50   | I/mi             | $f_ID$   |  |   | mi/h  |
| Number of Lanes, N   | 3  | :/-              | f <sub>N</sub>   |  |   | mi/h  |
| FFS (measured)   | 56.0   | mi/h             | FFS  |  | 56.0  | mi/h  |
| Base free-flow Speed, BFFS   | Magazza  | mi/h             |  |  |   |   |
| LOS and Performance  Operational (LOS)  v <sub>p</sub> = (V or DDHV) / (PHF x N  | x f <sub>in/</sub> x   | n a /la /la      | Design (N)  Design (N)  Design LOS   |  | £   |   |
| f <sub>p</sub> )   | <sup>HV</sup> 915  | pc/h/ln          | 1.5  | HV) / (PHF x N x   | I <sub>HV</sub> X   | pc/h  |
| S<br>D = v <sub>p</sub> / S  | 56.0<br>16.3   | mi/h<br>pc/mi/ln | f <sub>p</sub> )<br>S  |  |   | mi/h  |
| LOS  | В  | •                | $D = v_p / S$  | mbor of Louis Al   |   | pc/mi/ln  |
| Glossary   |  |                  | Factor Loc   | mber of Lanes, N   |   |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service  | S - Speed<br>D - Density<br>FFS - Free-flow<br>BFFS - Base fr  |                  | E <sub>R</sub> - Exhibits2<br>E <sub>T</sub> - Exhibits :<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1<br>12   | 1   | f <sub>LW</sub> - Exhibit 23-4<br>f <sub>LC</sub> - Exhibit 23-5<br>f <sub>N</sub> - Exhibit 23-6 |
| DDHV - Directional design ho   | our volume   |                  | , 5, 113,  | v <sub>p</sub> - Exhibits 23-2   | _, _0-0   | f <sub>ID</sub> - Exhibit 23-7  |
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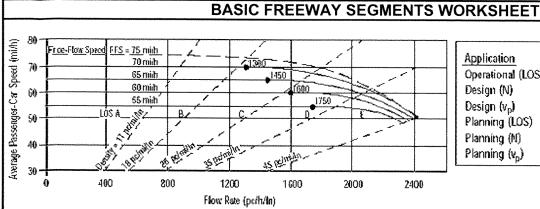
HCS+TM Version 5.3

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| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>b</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, V <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> . S. D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (N)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> . S, D |

|  | Flow Rate (pc/h/li       | 1)           |  |                    |                                       |
|--|--------------------------|--------------|--|--------------------|---------------------------------------|
| General Information                        |                          |              | Site Information                             |                    |                                       |
| Analyst                                    | SEB                      |              | Highway/Direction of Travel                  | Northbo            | und I-87                              |
| Agency or Company                          | CHA                      |              | From/To                                      | Exit 5 to          | Exit 6                                |
| Date Performed                             | 9/08/2011                |              | Jurisdiction                                 | NYSDO              | T                                     |
| Analysis Time Period                       | PM                       |              | Analysis Year                                | 2009 - E           | existing                              |
| Project Description Exit 4                 |                          |              |  |                    |                                       |
| ☑ Oper.(LOS)                               |                          | <b>*****</b> | Des.(N)                                      | □ Pla              | nning Data                            |
| Flow Inputs                                |                          | *****        |  |                    |                                       |
| Volume, V                                  | 6000                     | veh/h        | Peak-Hour Factor, PHF                        | 0.86               |                                       |
| AADT                                       |                          | veh/day      | %Trucks and Buses, $P_T$                     | 2                  |                                       |
| Peak-Hr Prop. of AADT, K                   |                          |              | %RVs, P <sub>R</sub>                         | 0                  |                                       |
| Peak-Hr Direction Prop, D                  |                          | 1. 11.       | General Terrain:                             | Level              |                                       |
| DDHV = AADT x K x D Driver type adjustment | 1.00                     | veh/h        | Grade % Length<br>Up/Down %                  | mi                 |                                       |
| Calculate Flow Adjustr                     |                          |              | ор/Down 78                                   |                    |                                       |
| f <sub>p</sub>                             | 1.00                     |              | E <sub>R</sub>                               | 1.2                |                                       |
| E <sub>T</sub>                             | 1.5                      |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990              |                                       |
| Speed Inputs                               | 7.0                      |              | Calc Speed Adj and FF                        |                    |                                       |
| Lane Width                                 | 12.0                     | ft           | Calc Speed Auj and FF                        | <u> </u>           |                                       |
|  |                          |              | $f_{LW}$                                     |                    | mi/h                                  |
| Rt-Shoulder Lat. Clearance                 | 6.0                      | ft           | f <sub>LC</sub>                              |                    | mi/h                                  |
| Interchange Density                        | 0.50                     | l/mi         | $f_{ID}$                                     |                    | mi/h                                  |
| Number of Lanes, N                         | 4                        |              | f <sub>N</sub>                               |                    | mi/h                                  |
| FFS (measured)                             | 56.0                     | mi/h         |  | 50.0               |                                       |
| Base free-flow Speed, BFFS                 |                          | mi/h         | FFS  | 56.0               | mi/h                                  |
| LOS and Performance                        | Measures                 |              | Design (N)                                   |                    |                                       |
| Operational (LOS)                          |                          |              | Design (N)                                   |                    |                                       |
|  | v f v                    |              | Design LOS                                   |                    |                                       |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$    | ^ ' <sub>HV</sub> ^ 1762 | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF \times N)$ | (f <sub>HV</sub> x |                                       |
| f <sub>p</sub> )                           |                          |              | $f_p$ )                                      |                    | pc/h                                  |
| S  | 56.0                     | mi/h         | S  |                    | mi/h                                  |
| D = v <sub>p</sub> / S                     | 31.5                     | pc/mi/ln     | $D = v_p / S$                                |                    | pc/mi/ln                              |
| LOS  | D                        |              | Required Number of Lanes, N                  | I                  | ροπιπ                                 |
| Glossary                                   |                          |              | Factor Location                              |                    | · · · · · · · · · · · · · · · · · · · |
| N - Number of lanes                        | S - Speed                |              |  |                    |                                       |
| V - Hourly volume                          | D - Density              |              | E <sub>R</sub> - Exhibits23-8, 23-10         |                    | f <sub>LW</sub> - Exhibit 23-4        |
| v <sub>p</sub> - Flow rate                 | FFS - Free-flov          | / speed      | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-   | 11                 | f <sub>LC</sub> - Exhibit 23-5        |
| LOS - Level of service                     |                          |              | f <sub>p</sub> - Page 23-12                  |                    | f <sub>N</sub> - Exhibit 23-6         |
|  | BFFS - Base fr           | ee-now speed | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | 2, 23-3            | f <sub>ID</sub> - Exhibit 23-7        |
| DDHV - Directional design ho               | our volume               |              |  |                    |                                       |



| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, VD               | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>o</sub> . S. D |

|   | Flow Rate (pc/h/           | in)      |  |           |                                |
|---|----------------------------|----------|--|-----------|--------------------------------|
| General Information                           |                            |          | Site Information                             |           |                                |
| Analyst                                       | SEB                        |          | Highway/Direction of Travel                  | Southbo   | ound I-87                      |
| Agency or Company                             | CHA                        |          | From/To                                      | Exit 6 to | Exit 5                         |
| Date Performed                                | 9/08/2011                  |          | Jurisdiction                                 | NYSDC     | )T                             |
| Analysis Time Period                          | PM                         |          | Analysis Year                                | 2009 - I  | Existing                       |
| Project Description Exit 4                    |                            |          |  |           |                                |
| Oper.(LOS)                                    | )                          |          | Des.(N)                                      | □ Pla     | anning Data                    |
| Flow Inputs                                   |                            |          |  |           |                                |
| Volume, V                                     | 3300                       | veh/h    | Peak-Hour Factor, PHF                        | 0.92      |                                |
| AADT  |                            | veh/day  | %Trucks and Buses, $P_T$                     | 2         |                                |
| Peak-Hr Prop. of AADT, K                      |                            |          | %RVs, P <sub>R</sub>                         | 0         |                                |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D |                            | I- O-    | General Terrain:                             | Level     |                                |
| Oriver type adjustment                        | 1.00                       | veh/h    | Grade % Length<br>Up/Down %                  | mi        |                                |
| Calculate Flow Adjusti                        |                            |          | Op/Down 78                                   |           |                                |
| f <sub>p</sub>                                | 1.00                       |          | E <sub>R</sub>                               | 1.2       |                                |
| E <sub>T</sub>                                | 1.5                        |          | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990     |                                |
| Speed Inputs                                  |                            |          | Calc Speed Adj and FF                        |           |                                |
| ane Width                                     | 12.0                       | ft       |  |           | - 11                           |
| Rt-Shoulder Lat. Clearance                    | 6.0                        | ft       | f <sub>LW</sub>                              |           | mi/h                           |
| nterchange Density                            | 0.50                       | l/mi     | f <sub>LC</sub>                              |           | mi/h                           |
| Number of Lanes, N                            | 4                          |          | f <sub>ID</sub>                              |           | mi/h                           |
| FFS (measured)                                | 56.0                       | mi/h     | f <sub>N</sub>                               |           | mi/h                           |
| Base free-flow Speed, BFFS                    |                            | mi/h     | FFS  | 56.0      | mi/h                           |
| OS and Performance                            | Measures                   |          | Design (N)                                   |           |                                |
|   |                            |          | Design (N)                                   |           |                                |
| Operational (LOS)                             |                            |          | Design LOS                                   |           |                                |
| $y_p = (V \text{ or DDHV}) / (PHF x N)$       | x f <sub>HV</sub> x<br>906 | pc/h/ln  | $v_p = (V \text{ or DDHV}) / (PHF x N x)$    | · f v     |                                |
| <sub>p</sub> )                                | 900                        | ролин    | <b>.</b> -                                   | ' 'HV ^   | pc/h                           |
| 3   | 56.0                       | mi/h     | f <sub>p</sub> )                             |           |                                |
| $0 = v_p / S$                                 | 16.2                       | pc/mi/ln | S  |           | mi/h                           |
| os °  | В                          | •        | $D = v_p / S$                                |           | pc/mi/ln                       |
|   |                            |          | Required Number of Lanes, N                  |           |                                |
| Glossary                                      |                            |          | Factor Location                              |           |                                |
| I - Number of lanes                           | S - Speed                  |          | F - Evhibite 23 8 23 10                      |           | f Eyhihit 02 4                 |
| / - Hourly volume                             | D - Density                |          | E <sub>R</sub> - Exhibits 23-8, 23-10        | 14        | f <sub>LW</sub> - Exhibit 23-4 |
| <sub>p</sub> - Flow rate                      | FFS - Free-flov            | v speed  | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1  | 11        | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                         | BFFS - Base fr             |          | f <sub>p</sub> - Page 23-12                  |           | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho                  |                            | •        | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | 2, 23-3   | f <sub>ID</sub> - Exhibit 23-7 |
|   | · - · - · · · · · ·        |          |  |           |                                |

|   | RA                 | MPS AND                       | KAMP JUN                               | STICING W                    | OKKSIIL  | <u></u>                                  |                         |                                   |                                      |  |  |
|---|--------------------|-------------------------------|--|------------------------------|--|--|-------------------------|-----------------------------------|--------------------------------------|--|--|
| General Infor                                 | mation             |                               |  | Site Infor                   | mation   |  |                         |                                   |                                      |  |  |
| Analyst                                       | SEB                |                               | Fre                                    | eeway/Dir of Tra             |  | Northbound I-8                           | 37                      |                                   |                                      |  |  |
| gency or Company                              | CHA                |                               |  | nction                       | Exit 2W On-Ramp  |  |                         |                                   |                                      |  |  |
| ate Performed                                 |                    | /2011                         | Ju                                     | risdiction                   | NYSDOT   |  |                         |                                   |                                      |  |  |
| nalysis Time Period                           | l PM               |                               | An                                     | alysis Year                  | 2009 Existing  |  |                         |                                   |                                      |  |  |
| roject Description                            | Exit 4             |                               |  |                              |  | <u> </u>                                 |                         |                                   |                                      |  |  |
| nputs   |                    |                               |  |                              |  |  |                         |                                   |                                      |  |  |
| pstream Adj Ramp                              |                    | Terrain: Level                |  |                              |  |  |                         | Downstre<br>Ramp                  | eam Adj                              |  |  |
| ▼ Yes ☐ On                                    | ı                  |                               |  |                              |  |  |                         | ☐ Yes                             | □ On                                 |  |  |
| No  ✓ Off                                     | f                  |                               |  |                              |  |  |                         | ✓ No                              | ☐ Off                                |  |  |
| <sub>up</sub> = 1100                          | ft                 |                               | E4.0 mnh                               |                              | <u> </u>   | 0 0 mph                                  |                         | L <sub>down</sub> =               | ft                                   |  |  |
| / <sub>u</sub> = 910 ve                       | eh/h               | 3                             | <sub>FF</sub> = 56.0 mph<br>Sketch ( s | show lanes, L <sub>A</sub> , | $S_{FR} = 4$ $L_{D_t} V_{D_t} V_t$                     | u.u mpn                                  |                         | $V_D =$                           | veh/h                                |  |  |
| Conversion to                                 | o pc/h Un          | der Base C                    |  | . A                          | D. K. I.   |  |                         |                                   |                                      |  |  |
| (pc/h)  | V<br>(Veh/hr)      | PHF                           | Terrain                                | %Truck                       | %Rv  | f <sub>HV</sub>                          | fp                      | v = V/PH                          | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| reeway  | 4400               | 0.86                          | Level                                  | 2                            | 0  | 0.990                                    | 1.00                    |                                   | 5167                                 |  |  |
| Ramp  | 700                | 0.92                          | Level                                  | 2                            | 0  | 0.990                                    | 1.00                    |                                   | 768                                  |  |  |
| JpStream                                      | 910                | 0.92                          | Level                                  | 2                            | 0  | 0.990                                    | 1.00                    |                                   | 999                                  |  |  |
| DownStream                                    | 710                | 0.72                          | Level                                  |                              | Ů  | 0.770                                    | 1.00                    |                                   | 777                                  |  |  |
|   |                    | Merge Areas                   |  |                              |  |  | Diverge Are             | eas                               |                                      |  |  |
| stimation of                                  |                    | <u> </u>                      |  |                              | Estimation of v <sub>12</sub>                          |  |                         |                                   |                                      |  |  |
|   |                    | /D \                          |  |                              |  |  |                         |                                   |                                      |  |  |
|   | $V_{12} = V_F$     |                               |  |                              |  | V <sub>12</sub>                          | $= V_R + (V_F)$         | - V <sub>R</sub> )P <sub>FD</sub> |                                      |  |  |
| EQ =  | 1337.29            | 9 (Equation 2                 | 25-2 or 25-3)                          |                              | L <sub>EQ</sub> =                                      |  | (Equation               | 25-8 or 25-                       | 9)                                   |  |  |
| FM =  | 0.586              | using Equation                | on (Exhibit 25-5)                      |                              | P <sub>FD</sub> =                                      |  | using Equ               | uation (Exhibit                   | 25-12)                               |  |  |
| 12 =  | 3029               | pc/h                          |  |                              | V <sub>12</sub> = pc/h                                 |  |                         |                                   |                                      |  |  |
| <sub>3</sub> or V <sub>av34</sub>             | 2138               | pc/h (Equatio                 | n 25-4 or 25-                          |                              | 1  |  | •                       | tion 25-15 or 2                   | 5 14)                                |  |  |
|   | 5)                 |                               |  |                              | V <sub>3</sub> or V <sub>av34</sub>                    | 0.700//                                  |                         |                                   | 0-10)                                |  |  |
| s $V_3$ or $V_{av34} > 2,70$                  | 0 pc/h?            | s 🗹 No                        |  |                              |  |  | ? TYes T                |                                   |                                      |  |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5 * | V <sub>12</sub> /2 | s 🗹 No                        |  |                              | Is V <sub>3</sub> or V <sub>av3</sub>                  | <sub>34</sub> > 1.5 * V <sub>12</sub> /2 | Yes T                   | No                                |                                      |  |  |
| Yes,V <sub>12a</sub> =                        |                    | (Equation 25                  | -8)                                    |                              | If Yes,V <sub>12a</sub> =                              |  | pc/h (Equ               | ation 25-18)                      |                                      |  |  |
| Capacity Che                                  | •                  | ( 1                           | -,                                     |                              | Capacit  | y Checks                                 |                         |                                   |                                      |  |  |
| supuonty one                                  | Actual             | Ca                            | pacity                                 | LOS F?                       | Capacity   | Actu                                     |                         | Capacity                          | LOS F?                               |  |  |
|   | 7 icidai           | 1 1                           | pacity                                 | 2031.                        | V <sub>F</sub>   | 71010                                    | Exhibit                 |                                   | 2031.                                |  |  |
|   |                    |                               |  |                              | <u> </u>   |  |                         |                                   | _                                    |  |  |
| $V_{FO}$                                      | 5935               | Exhibit 25-7                  |  | No                           | $V_{FO} = V_{F}$                                       | - V <sub>R</sub>                         | Exhibit                 | 25-14                             |                                      |  |  |
|   |                    |                               |  |                              | V <sub>R</sub>   |  | Exhibit                 | 25-3                              |                                      |  |  |
| low Entering                                  | n Merge In         | fluence A                     | rea                                    |                              | Flow En  | tering Di                                | verge Infl              | uence Are                         | <u></u>                              |  |  |
|   | Actual             | 1                             | )esirable                              | Violation?                   |  | Actual                                   | Max [                   | Desirable                         | Violation?                           |  |  |
| V <sub>R12</sub>                              | 3797               | Exhibit 25-7                  | 4600:All                               | No                           | V <sub>12</sub>  |  | Exhibit 25-             | 14                                |                                      |  |  |
| evel of Serv                                  | ice Deterr         | nination (in                  | f not F)                               |                              | <del></del>  | Service                                  |                         | ation (if n                       | ot F)                                |  |  |
|   |                    | 0.0078 V <sub>12</sub> - 0.00 |  |                              | 1  |  | + 0.0086 V <sub>1</sub> |                                   | <del>- · · -</del> /                 |  |  |
| <sub>R</sub> = 29.4 (pc                       | 10                 | 12 3.00                       | А                                      |                              | L  | c/mi/ln)                                 | 3.0000 1                | 2 3.333 <b>-</b> D                |                                      |  |  |
| OS = D (Exhib                                 |                    |                               |  |                              |  | xhibit 25-4)                             |                         |                                   |                                      |  |  |
| Speed Detern                                  | · ·                |                               |  |                              |  | etermina                                 | tion                    |                                   |                                      |  |  |
| M <sub>S</sub> = 0.427 (Exil                  |                    |                               |  |                              | <del>                                     </del>       | xhibit 25-19)                            |                         |                                   |                                      |  |  |
| -   |                    |                               |  |                              | 3  | oh (Exhibit 25-                          | 19)                     |                                   |                                      |  |  |
| $_{R}$ = 50.0 mph (                           | (Exhibit 25-19)    |                               |  |                              | .,   |  |                         |                                   |                                      |  |  |
|   |                    |                               |  |                              | $S_0$ = mph (Exhibit 25-19)<br>S = mph (Exhibit 25-15) |  |                         |                                   |                                      |  |  |
| <sub>0</sub> = 50.1 mph (                     | (Exhibit 25-19)    |                               |  |                              |  |  |                         |                                   |                                      |  |  |

|  |   |                                  | RAMP                | S AND RAM                  | P JUNCTI   | ONS WO                                    | RKS              | HEET                                  |   |                     |                                    |  |  |
|--|---|----------------------------------|---------------------|----------------------------|--|---|------------------|---------------------------------------|---|---------------------|------------------------------------|--|--|
| General  | Inforn  | nation                           |                     | <u> </u>                   | Site Infor   |   |                  |                                       |   |                     |                                    |  |  |
| Analyst<br>Agency or Co<br>Date Perform<br>Analysis Time | ompany<br>ned<br>e Period                     | SEB<br>CHA<br>9/08/2<br>PM       | 2011                | Ju<br>Ju                   | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | avel                                      | Exit 4<br>NYSD   | ound I-87<br>NB Off<br>OT<br>Existing |   |                     |                                    |  |  |
| Project Descr<br><b>Inputs</b>                           | ription E                                     | EXIT 4                           |                     |                            |  |   |                  |                                       |   |                     |                                    |  |  |
| Upstream Ad  | i Damn  |                                  | Terrain: Leve       | el                         |  |   |                  |                                       |   | Downstrea           | m Adi                              |  |  |
|  |   |                                  |                     |                            |  |   |                  |                                       |   | Ramp                | ·                                  |  |  |
| ✓ No   | ☐ Off   |                                  |                     |                            |  |   |                  |                                       |   | ✓ Yes               | ☑ On                               |  |  |
| INO  | II OII  |                                  |                     |                            |  |   |                  |                                       |   | □ No                | ☐ Off                              |  |  |
| L <sub>up</sub> =  | ft  |                                  |                     | 5 <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4                       | 0 0 mi           | nh                                    |   | L <sub>down</sub> = | 2660 ft                            |  |  |
| V <sub>u</sub> =   | veh/h   |                                  |                     | • •                        | show lanes, L <sub>A</sub> ,                               |   | 0.0 111          | J11                                   |   | V <sub>D</sub> =    | 1330 veh/l                         |  |  |
| Convers  | ion to  | pc/h Und                         | der Base            | Conditions                 |  | D IC I                                    |                  |                                       |   |                     |                                    |  |  |
| (pc/h)   | )   | V<br>(Veh/hr)                    | PHF                 | Terrain                    | %Truck   | %Rv                                       |                  | f <sub>HV</sub>                       | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway  | ay 5100 0.86 Level 2                          |                                  |                     |                            |  | 0   | 0                | .990                                  | 1.00  | 59                  | 90                                 |  |  |
| Ramp   |   | 600                              | 0.86                | Level                      | 2  | 0   | 0                | .990                                  | 1.00  | 7                   | 05                                 |  |  |
| UpStream<br>DownStream                                   | ,   | 1330                             | 0.88                | Level                      | 1  | 0   | 1                | .995                                  | 1.00  | 15                  | .10                                |  |  |
| Downstican   | <u>'                                     </u> |                                  | Merge Areas         | revei                      | , ,  | Diverge Areas                             |                  |                                       |   |                     |                                    |  |  |
| Estimati   | on of   |                                  | J                   |                            |  | Estimati                                  | ion d            |                                       | <u> </u>  |                     |                                    |  |  |
|  |   | V <sub>12</sub> = V <sub>F</sub> | ( P <sub>EM</sub> ) |                            |  | 1   |                  |                                       | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | )P <sub>ED</sub>    |                                    |  |  |
| L <sub>EQ</sub> =  |   | 12 1                             | ation 25-2 o        | r 25-3)                    |  | L <sub>FO</sub> =                         |                  |                                       | Equation 25-8                                       | `                   |                                    |  |  |
| P <sub>FM</sub> =  |   |                                  | Equation (I         |                            |  | P <sub>FD</sub> =                         |                  |                                       | 578 using Eq  |                     | nibit 25-12)                       |  |  |
| V <sub>12</sub> =  |   | pc/h                             |                     |                            |  | V <sub>12</sub> =                         |                  | 3                                     | 759 pc/h  |                     |                                    |  |  |
| V <sub>3</sub> or V <sub>av34</sub>                      |   | pc/h (                           | (Equation 25        | 5-4 or 25-5)               |  | $V_3$ or $V_{av34}$                       |                  | 2                                     | 231 pc/h (Equ                                       | ation 25-1          | 5 or 25-16)                        |  |  |
| Is V <sub>3</sub> or V <sub>av3</sub>                    | 4 > 2,700                                     | pc/h? ☐ Yes                      | s 🗆 No              |                            |  | Is V <sub>3</sub> or V <sub>av3</sub>     | 34 > 2,          | 700 pc/h? [                           | Tyes   ✓ No   |                     |                                    |  |  |
|  | <sub>4</sub> > 1.5 * \                        | $V_{12}/2  \square  \text{Yes}$  |                     |                            |  |   |                  |                                       | Yes Vo  |                     |                                    |  |  |
| If Yes,V <sub>12a</sub> =                                |   |                                  | (Equation 2         | 5-8)                       |  | If Yes,V <sub>12a</sub> =                 |                  | · ·                                   | c/h (Equation                                       | 25-18)              |                                    |  |  |
| Capacity   | / Chec  |                                  |                     |                            | ,  | Capacity                                  | y Ch             |                                       |   |                     | _                                  |  |  |
|  |   | Actual                           | C                   | Capacity                   | LOS F?   | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \     |                  | Actual                                | <u> </u>  | pacity              | LOS F?                             |  |  |
| ν,   |   |                                  |                     |                            |  | V <sub>F</sub>                            | .,               | 5990                                  | Exhibit 25-1  |                     | No                                 |  |  |
| V <sub>FO</sub>  |   |                                  | Exhibit 25-7        |                            |  | $V_{FO} = V_{F}$                          | - V <sub>R</sub> | 5285                                  | Exhibit 25-1  | _                   | No                                 |  |  |
|  |   |                                  |                     |                            |  | V <sub>R</sub>                            |                  | 705                                   | Exhibit 25-3  |                     | No                                 |  |  |
| Flow En  | tering  | Merge In                         | fluence A           | <b>Vrea</b> Desirable      | Violation?   | Flow En                                   | 1                | <b>ng Dive</b><br>Actual              | <b>rge Influen</b><br>Max Desirat                   |                     | Violation?                         |  |  |
| V <sub>R12</sub>   |   | ACIUAI                           | Exhibit 25-7        | Desirable                  | VIOIALIOIT?  | V <sub>12</sub>                           | _                | 3759                                  | Exhibit 25-14                                       | 4400:All            | No                                 |  |  |
| l evel of  | Servi   | ce Detern                        | nination (          | if not F)                  |  |   |                  |                                       | eterminatio   |                     |                                    |  |  |
|  |   |                                  | •                   | · 0.00627 L <sub>A</sub>   |  | <del></del>                               |                  |                                       | .0086 V <sub>12</sub> - 0.                          | •                   | ,                                  |  |  |
|  | pc/mi/lr                                      | • • •                            | 12                  | A                          |  |   |                  | :/mi/ln)                              | 12  | U .                 |                                    |  |  |
| ,  | Exhibit                                       | •                                |                     |                            |  |   |                  | bit 25-4)                             |   |                     |                                    |  |  |
| Speed D  | `   |                                  |                     |                            |  | Speed D                                   | •                |                                       | on  |                     |                                    |  |  |
|  | xibit 25                                      |                                  |                     |                            |  | <del>'</del>                              |                  | xhibit 25                             |   |                     |                                    |  |  |
| _  |   | oit 25-19)                       |                     |                            |  | S <sub>R</sub> = 50.0 mph (Exhibit 25-19) |                  |                                       |   |                     |                                    |  |  |
|  |   | oit 25-19)                       |                     |                            |  | S <sub>0</sub> = 56.6 mph (Exhibit 25-19) |                  |                                       |   |                     |                                    |  |  |
| -  | •   | oit 25-14)                       |                     |                            |  | S = 52.3 mph (Exhibit 25-15)              |                  |                                       |   |                     |                                    |  |  |
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|  |                          | <u>RAMPS</u>                         | AND                 | RAMP JUNC         | TIONS W  | OKKSHE  | <u> </u>             |                    |                                      |                     |                                      |
|--|--------------------------|--------------------------------------|---------------------|-------------------|--|---|----------------------|--------------------|--------------------------------------|---------------------|--------------------------------------|
| General In   | formation                | )                                    |                     |                   | Site Infor   | mation  |                      |                    |                                      |                     |                                      |
| Analyst<br>Agency or Comp<br>Date Performed<br>Analysis Time P | oany<br>eriod            | SEB<br>CHA<br>9/08/2011<br>PM        |                     | Fre<br>Jui<br>Jui | eway/Dir of Tr<br>nction<br>isdiction<br>alysis Year | Exit 4 NB On-Ramp<br>NYSDOT                                     |                      |                    |                                      |                     |                                      |
| Project Descript   | ion Exit 4               |                                      |                     |                   |  |   |                      |                    |                                      |                     |                                      |
| Inputs   |                          | Form                                 | in: Level           |                   |  |   |                      |                    |                                      |                     |                                      |
| Jpstream Adj R<br>☐ Yes  | amp<br>On                | Пена                                 | IIII: Levei         |                   |  |   |                      |                    |                                      | Downstre<br>Ramp    | am Adj                               |
|  |                          |                                      |                     |                   |  |   |                      |                    |                                      | ✓ Yes               | □ On                                 |
|  | Off                      |                                      |                     |                   |  |   |                      |                    |                                      | □ No                | ✓ Off                                |
| <sub>-up</sub> = f   |                          |                                      | S                   | FF = 56.0 mph     |  | S <sub>FR</sub> = 40  | 0.0 mph              |                    |                                      | L <sub>down</sub> = | 3500 ft                              |
| / <sub>u</sub> = ve  | eh/h                     | how lanes, L <sub>A</sub> ,          | $L_{D'}V_{R'}V_{f}$ |                   |  |   | V <sub>D</sub> =     | 440 veh/h          |                                      |                     |                                      |
| Conversio  | n to pc/h                | Under E                              | Base C              | Conditions        |  | _   |                      |                    |                                      |                     |                                      |
| (pc/h)   | V<br>(Veh/h              | r) P                                 | PHF                 | Terrain           | %Truck   | %Rv   | f <sub>H</sub>       | V                  | f <sub>p</sub>                       | v = V/PH            | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 4500                     | 0.                                   | .86                 | Level             | 2  | 0   | 0.99                 | 0                  | 1.00                                 |                     | 5285                                 |
| Ramp   | 1330                     | 0.                                   | .88                 | Level             | 1  | 0   | 0.99                 | 5                  | 1.00                                 |                     | 1519                                 |
| UpStream   | 440                      |                                      | 00                  | Lovel             | 2  | 0   | 0.00                 | _                  | 1.00                                 |                     | 405                                  |
| DownStream   | 440                      |                                      | 92<br>Areas         | Level             | 3  | 0   | 0.98                 |                    | 1.00<br>Diverge Areas                |                     | 485                                  |
| Estimation   | 1 of V <sub>42</sub>     | Wicigo                               | Aicas               |                   |  | Estimati  | on of                | V <sub>42</sub>    | nverge Areas                         |                     |                                      |
|  |                          | = V <sub>F</sub> ( P <sub>FM</sub> ) | ١                   |                   |  |   |                      |                    |                                      |                     |                                      |
| _  |                          |                                      |                     | DE 0 ~~ DE 0\     |  |   |                      |                    | V <sub>R</sub> + (V <sub>F</sub> - V |                     |                                      |
| -EQ =  |                          |                                      | -                   | 25-2 or 25-3)     |  | L <sub>EQ</sub> =   |                      |                    | Equation 25                          |                     |                                      |
| P <sub>FM</sub> =  |                          | _                                    | g Equati            | on (Exhibit 25-5) |  | P <sub>FD</sub> = using Equation (Exhibit 25-12)                |                      |                    |                                      |                     |                                      |
| / <sub>12</sub> =  |                          | 35 <b>pc/h</b>                       | ·- ··               | 0.5.4.05          |  | V <sub>12</sub> =   |                      | ı                  | oc/h                                 |                     |                                      |
| $V_3$ or $V_{av34}$  | 210<br>5)                | )0 pc/h (                            | Equatio             | n 25-4 or 25-     |  | $V_3$ or $V_{av34}$   |                      |                    | pc/h (Equation                       | 25-15 or 25         | 5-16)                                |
| Is V <sub>3</sub> or V <sub>av34</sub> >                       |                          | Yes 🔽                                | No                  |                   |  | Is V <sub>3</sub> or V <sub>av3</sub>                           | 4 > 2,700            | ) pc/h? [          | Yes No                               | )                   |                                      |
|  | 1.5 * V <sub>12</sub> /2 |                                      |                     |                   |  | Is V <sub>3</sub> or V <sub>av3</sub>                           | <sub>4</sub> > 1.5 * | V <sub>12</sub> /2 | Yes No                               | )                   |                                      |
| Yes,V <sub>12a</sub> =   | · <del>-</del>           | c/h (Equa                            |                     | -8)               |  | If Yes,V <sub>12a</sub> =                                       |                      | ı                  | oc/h (Equati                         | on 25-18)           |                                      |
| Capacity (   |                          | \ I                                  |                     | ,                 |  | Capacity  | Che                  | cks                |                                      |                     |                                      |
| - aparty   | Actua                    | nl                                   | Ca                  | pacity            | LOS F?   |   |                      | Actual             | C                                    | apacity             | LOS F?                               |
|  |                          | <u> </u>                             |                     | , ,               |  | V <sub>F</sub>  |                      |                    | Exhibit 25                           |                     |                                      |
| $V_{FO}$   | 6804                     | Exhi                                 | bit 25-7            |                   | Yes  | $V_{FO} = V_F$  | · V <sub>5</sub>     |                    | Exhibit 25                           | _                   |                                      |
| - FO   |                          |                                      | DIC 20 7            |                   | 103  | V <sub>R</sub>  | ·ĸ                   |                    | Exhibit 25                           |                     | _                                    |
| Flow Ento  | ı<br>ring Merg           |                                      | <u> </u>            |                   |  | -   | toring               | Divo               |                                      |                     |                                      |
| -iow Eine  | Actua                    |                                      |                     | Desirable         | Violation?   | FIOW EII  | Act                  |                    | rge Influe<br>Max Des                |                     | Violation?                           |
| V <sub>R12</sub>   | 4704                     |                                      | bit 25-7            | 4600:All          | Yes  | V <sub>12</sub>   | AUI                  |                    | Exhibit 25-14                        | ii dibilo           | v iolation:                          |
| PVPL OF S  | ervice Det               |                                      |                     |                   | 103  |   | Servi                |                    | terminati                            | on (if n            | ot F)                                |
|  | 75 + 0.00734 v           |                                      |                     |                   |  |   |                      |                    | .0086 V <sub>12</sub> -              |                     | ,,,                                  |
|  | 8 (pc/mi/ln)             | R . 0.0070                           | 12 0.0              | 0027 LA           |  |   | c/mi/ln)             |                    | .0000 112                            | o.ooo <u>-</u> D    |                                      |
| IX.  | Exhibit 25-4)            |                                      |                     |                   |  |   | xhibit 2             |                    |                                      |                     |                                      |
|  | erminatio                | n                                    |                     |                   |  | Speed D   |                      |                    | <u> </u>                             |                     |                                      |
| •  |                          | 11                                   |                     |                   |  | <del>' '</del>  | chibit 25-           |                    | <i>/</i> 11                          |                     |                                      |
| 3  | (Exibit 25-19)           | 40)                                  |                     |                   |  | 3   |                      |                    |                                      |                     |                                      |
|  | nph (Exhibit 25          |                                      |                     |                   |  |   |                      | it 25-19)          |                                      |                     |                                      |
| E 0 2 P  | nph (Exhibit 25          | -19)                                 |                     |                   |  | S <sub>0</sub> = mph (Exhibit 25-19)<br>S = mph (Exhibit 25-15) |                      |                    |                                      |                     |                                      |
| U  | nph (Exhibit 25          | -                                    |                     |                   |  | · .   | . /                  | 05                 |                                      |                     |                                      |

|  |                              | KAIVIFS                               | AND RAM                  |   |                                  | itito                                  |                 |   |                      |                                    |  |  |
|--|------------------------------|---------------------------------------|--------------------------|---|----------------------------------|--|-----------------|---|----------------------|------------------------------------|--|--|
| General Infor  | mation                       |                                       |                          | Site Infor  |                                  |  |                 |   |                      |                                    |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period |                              | 2011                                  | Ju<br>Ju                 | eeway/Dir of Tr<br>Inction<br>Irisdiction<br>nalysis Year |                                  | Northbo<br>Exit 5 N<br>NYSDO<br>2009 E | T               |   |                      |                                    |  |  |
| Project Description  | Exit 4                       |                                       |                          |   |                                  |  |                 |   |                      |                                    |  |  |
| Inputs   |                              | Fr                                    |                          |   |                                  |  |                 |   |                      |                                    |  |  |
| Upstream Adj Ramp  |                              | Terrain: Level                        |                          |   |                                  |  |                 |   | Downstrea<br>Ramp    | m Adj                              |  |  |
| ✓ Yes ✓ On   |                              |                                       |                          |   |                                  |  |                 |   | ☐ Yes                | □ On                               |  |  |
| I NO I OII   |                              |                                       |                          |   |                                  |  |                 |   | ✓ No                 | ☐ Off                              |  |  |
| L <sub>up</sub> = 3500   | ft                           |                                       | <sub>-F</sub> = 56.0 mph |   |                                  |  |                 |   | L <sub>down</sub> =  | ft                                 |  |  |
| $V_{u} = 1330 \text{ V}$   | show lanes, L <sub>a</sub> , | $S_{FR} = 3$<br>$L_{D}, V_{R}, V_{f}$ | 35.0 mp                  | h   |                                  | V <sub>D</sub> =                       | veh/h           |   |                      |                                    |  |  |
| Conversion to  | pc/h Und                     | der Base C                            | Conditions               |   |                                  |  |                 |   |                      |                                    |  |  |
| (pc/h)   | V<br>(Veh/hr)                | PHF                                   | Terrain                  | %Truck  | %Rv                              |  | f <sub>HV</sub> | f <sub>p</sub>                                      | v = V/PHF            | x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway  | 5800                         | 0.86                                  | Level                    | 2   | 0                                | 0.                                     | 990             | 1.00  | 681                  | 12                                 |  |  |
| Ramp   | 440                          | 0.92                                  | Level                    | 3   | 0                                | _                                      | 985             | 1.00  | 48                   | 5                                  |  |  |
| UpStream   | 1330                         | 0.88                                  | Level                    | 1   | 0                                | 0.                                     | 995             | 1.00  | 151                  | 19                                 |  |  |
| DownStream   |                              | Merge Areas                           |                          |   |                                  |  |                 | Diverge Areas                                       |                      |                                    |  |  |
| Estimation of  |                              | viei ye Ai eas                        |                          |   | Estimat                          | ion o                                  |                 | Diverge Areas                                       |                      |                                    |  |  |
| L3timation of  |                              | <b>/5</b> )                           |                          |   | LStimat                          | 1011 0                                 |                 | ., ., .,  |                      |                                    |  |  |
|  | $V_{12} = V_F$               |                                       |                          |   |                                  |  |                 | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> |                      |                                    |  |  |
| L <sub>EQ</sub> =  |                              | ation 25-2 or                         |                          |   | L <sub>EQ</sub> =                |  |                 | 960.55 (Equati                                      |                      |                                    |  |  |
| P <sub>FM</sub> =  | _                            | Equation (Ex                          | khibit 25-5)             |   | P <sub>FD</sub> =                |  |                 | 713 using Eq  | uation (Exhi         | bit 25-12)                         |  |  |
| V <sub>12</sub> =  | pc/h                         |                                       |                          |   | V <sub>12</sub> =                |  |                 | 999 pc/h  |                      |                                    |  |  |
| $V_3$ or $V_{av34}$  |                              | (Equation 25-                         | 4 or 25-5)               |   | $V_3$ or $V_{av34}$              |  |                 | 813 <b>pc/h (Equ</b>                                | ation 25-15          | or 25-16                           |  |  |
| Is $V_3$ or $V_{av34} > 2,70$  |                              |                                       |                          |   |                                  |  |                 | Tyes   ✓ No   |                      |                                    |  |  |
| Is $V_3$ or $V_{av34} > 1.5$   | · <del>-</del>               |                                       |                          |   |                                  |  |                 | Yes 🗹 No  |                      |                                    |  |  |
| f Yes,V <sub>12a</sub> =   |                              | (Equation 25-                         | ·8)                      |   | If Yes,V <sub>12a</sub> =        |  |                 | c/h (Equation                                       | 25-18)               |                                    |  |  |
| Capacity Che   | cks                          |                                       |                          |   | Capacit                          | y Ch                                   | ecks            |   |                      |                                    |  |  |
|  | Actual                       | Ca                                    | pacity                   | LOS F?  |                                  |  | Actual          |   | pacity               | LOS F                              |  |  |
|  |                              |                                       |                          |   | V <sub>F</sub>                   |  | 6812            | Exhibit 25-1  | 4 6780               | Yes                                |  |  |
| V <sub>FO</sub>  |                              | Exhibit 25-7                          |                          |   | $V_{FO} = V_{F}$                 | - V <sub>R</sub>                       | 6327            | Exhibit 25-1  | 4 6780               | No                                 |  |  |
|  |                              |                                       |                          |   | V <sub>R</sub>                   |  | 485             | Exhibit 25-3  | Exhibit 25-3 2000 No |                                    |  |  |
| Flow Entering  | Merge In                     | fluence A                             | rea                      |   | Flow Er                          | nterin                                 | g Dive          | rge Influen   | ce Area              |                                    |  |  |
|  | Actual                       |                                       | esirable                 | Violation?  | ļ                                | -                                      | Actual          | Max Desirab   |                      | Violation                          |  |  |
| $V_{R12}$  |                              | Exhibit 25-7                          |                          | <u></u>   | V <sub>12</sub>                  |  | 1999            | Exhibit 25-14                                       | 4400:All             | Yes                                |  |  |
| Level of Serv  | ice Detern                   | nination (i                           | not F)                   |   | Level or                         | f Ser                                  | vice De         | terminatio  | n (if not l          | <del>-</del> )                     |  |  |
| $D_R = 5.475 + 0.$   | 00734 v <sub>R</sub> + (     | 0.0078 V <sub>12</sub> -              | 0.00627 L <sub>A</sub>   |   |                                  | $D_R = 4$                              | 1.252 + 0       | .0086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>   |                                    |  |  |
| D <sub>R</sub> = (pc/mi/   | n)                           |                                       |                          |   | D <sub>R</sub> = 45              | 5.0 <b>(pc</b>                         | /mi/ln)         |   |                      |                                    |  |  |
| LOS = (Exhibi  | t 25-4)                      |                                       |                          |   | 1                                |  | oit 25-4)       |   |                      |                                    |  |  |
| Speed Detern   | nination                     |                                       |                          |   | Speed L                          |  |                 | on  |                      |                                    |  |  |
| $M_S = $ (Exibit 25)   |                              |                                       |                          |   |                                  |  | xhibit 25       |   |                      |                                    |  |  |
| o .  | ibit 25-19)                  |                                       |                          |   | $S_R$ = 49.4 mph (Exhibit 25-19) |  |                 |   |                      |                                    |  |  |
|  | ibit 25-19)                  |                                       |                          |   | $S_0$ = 58.3 mph (Exhibit 25-19) |  |                 |   |                      |                                    |  |  |
|  | •                            |                                       |                          |   | S = 51.5 mph (Exhibit 25-15)     |  |                 |   |                      |                                    |  |  |
| S = mph (Exh   | IDII 75-141                  |                                       |                          |   |                                  |  |                 |   |                      |                                    |  |  |

|  |                             |   | RAMP               | S AND RAM                          | P JUNCTI   | ONS WO   | RKS                                 | HEET                     |   |                     |                                    |  |  |
|--|-----------------------------|---|--------------------|------------------------------------|--|--|-------------------------------------|--------------------------|---|---------------------|------------------------------------|--|--|
| Genera   | I Inform                    | nation                                  |                    | <u> </u>                           | Site Infor   |  |                                     |                          |   |                     |                                    |  |  |
| Analyst<br>Agency or C<br>Date Perfori<br>Analysis Tin | Company<br>med<br>me Period | SEB<br>CHA<br>9/08/2<br>PM              | 2011               | Ju<br>Ju                           | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | avel :   | Southb<br>Exit 2V<br>NYSD<br>2009 E | V Off                    |   |                     |                                    |  |  |
| Project Des  | cription I                  | EXIT 4                                  |                    |                                    |  |  |                                     |                          |   |                     |                                    |  |  |
| Inputs   | di Dania                    |   | Terrain: Leve      | 1                                  |  |  |                                     |                          |   | Downstrea           | om Adi                             |  |  |
| Upstream A   |                             |   |                    |                                    |  |  |                                     |                          |   | Ramp                | •                                  |  |  |
|  |                             |   |                    |                                    |  |  |                                     |                          |   | Yes                 | ☑ On                               |  |  |
| ✓ No   | ☐ Off                       |   |                    |                                    |  |  |                                     |                          |   | □ No                | ☐ Off                              |  |  |
| L <sub>up</sub> =                                      | ft                          |   |                    | F/ 0 mmh                           |  | 0 4  | 0.0                                 | - L                      |   | L <sub>down</sub> = | 1300 ft                            |  |  |
| V <sub>u</sub> =                                       | veh/h                       |   | 5                  | $_{\text{FF}}$ = 56.0 mph Sketch ( | show lanes, L <sub>A</sub> ,                               | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$   | 0.0 mj                              | on                       |   | V <sub>D</sub> =    | 890 veh/h                          |  |  |
| Conver   | sion to                     | pc/h Und                                | der Base           | Conditions                         |  |  |                                     |                          |   |                     |                                    |  |  |
| (pc/   | h)                          | V<br>(Veh/hr)                           | PHF                | Terrain                            | %Truck   | %Rv  |                                     | $\mathbf{f}_{HV}$        | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway  | eway 3750 0.92 Level 2      |   |                    |                                    |  | 0  | 0                                   | .990                     | 1.00  | 41                  | 17                                 |  |  |
| Ramp   |                             | 430                                     | 0.92               | Level                              | 2  | 0  | 0                                   | .990                     | 1.00  | 4                   | 72                                 |  |  |
| UpStream<br>DownStrea                                  | ım                          | 890                                     | 0.92               | Level                              | 2  | 0  |                                     | .990                     | 1.00  | 9                   | <br>77                             |  |  |
| Bownouda   |                             |   | Merge Areas        | LCVCI                              |  | Diverge Areas  |                                     |                          |   |                     |                                    |  |  |
| Estimat  | tion of                     | v <sub>12</sub>                         | -                  |                                    |  | Estimati   | ion d                               | of v <sub>12</sub>       | -   |                     |                                    |  |  |
|  |                             | V <sub>12</sub> = V <sub>F</sub>        | (P <sub>FM</sub> ) |                                    |  |  |                                     | V <sub>12</sub> =        | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | P <sub>FD</sub>     |                                    |  |  |
| L <sub>EQ</sub> =                                      |                             | (Equa                                   | ation 25-2 or      | 25-3)                              |  | L <sub>FO</sub> =  |                                     | (                        | Equation 25-8                                       | or 25-9)            |                                    |  |  |
| P <sub>FM</sub> =                                      |                             | using                                   | Equation (         | Exhibit 25-5)                      |  | P <sub>FD</sub> =  |                                     | 0                        | .635 using Eq                                       | uation (Ext         | nibit 25-12)                       |  |  |
| V <sub>12</sub> =                                      |                             | pc/h                                    |                    |                                    |  | V <sub>12</sub> =  |                                     | 2                        | 788 pc/h  |                     |                                    |  |  |
| V <sub>3</sub> or V <sub>av34</sub>                    |                             |   | Equation 25        | 5-4 or 25-5)                       |  | $V_3$ or $V_{av34}$  |                                     |                          | 329 pc/h (Equ                                       | ation 25-1          | 5 or 25-16                         |  |  |
|  |                             | pc/h? ☐ Yes                             |                    |                                    |  |  |                                     |                          | TYes ✓ No   |                     |                                    |  |  |
|  |                             | $V_{12}/2  \square  Yes$                |                    |                                    |  |  |                                     |                          | ☐ Yes ☑ No  |                     |                                    |  |  |
| If Yes,V <sub>12a</sub> =                              |                             |   | Equation 25        | 5-8)                               |  | If Yes,V <sub>12a</sub> =  |                                     |                          | oc/h (Equation                                      | 25-18)              |                                    |  |  |
| Capacit  | ty Chec                     |   |                    |                                    | 1  | Capacity   | y Ch                                | 1                        | 1 .   |                     | 1.00.5                             |  |  |
|  |                             | Actual                                  |                    | apacity                            | LOS F?   | \ \  |                                     | Actual                   | _   | pacity              | LOS F                              |  |  |
|  |                             |   | Fbibit 2F 7        |                                    |  | V <sub>F</sub>   | \/                                  | 4117                     | Exhibit 25-1  | +                   | No                                 |  |  |
| V <sub>F</sub>   | 0                           |   | Exhibit 25-7       |                                    |  | $V_{FO} = V_{F}$   | - v <sub>R</sub>                    | 3645                     | Exhibit 25-1  | _                   | No<br>No                           |  |  |
| <u> </u>   |                             |   | <u> </u>           |                                    |  | V <sub>R</sub> 472 Exhibit 25-3 2100  Flow Entering Diverge Influence Area |                                     |                          |   |                     |                                    |  |  |
| riow Er  | ntering<br>I                | Actual                                  | fluence A          | A <b>rea</b><br>Desirable          | Violation?   | riow En  | 1                                   | <i>ng Dive</i><br>Actual | rge Influen  Max Desirab                            |                     | Violation                          |  |  |
| V <sub>R1</sub>  | 12                          | , iciual                                | Exhibit 25-7       | D O SII UDIO                       | violation:   | V <sub>12</sub>  | _                                   | 2788                     | Exhibit 25-14                                       | 4400:All            | No                                 |  |  |
| Level o  | f Servi                     | ce Detern                               | nination (         | if not F)                          | ı  | 4  |                                     |                          | eterminatio   |                     | 1                                  |  |  |
|  |                             |   |                    | 0.00627 L <sub>A</sub>             |  |  |                                     |                          | 0.0086 V <sub>12</sub> - 0.                         | •                   | - /                                |  |  |
| D <sub>R</sub> =                                       | (pc/mi/lr                   | • | 12                 | A                                  |  |  |                                     | c/mi/ln)                 | 12  | Ь                   |                                    |  |  |
| LOS =  | <br>(Exhibit                | 25-4)                                   |                    |                                    |  |  |                                     | bit 25-4)                |   |                     |                                    |  |  |
| Speed I  | •                           |   |                    |                                    |  | Speed D  | •                                   |                          | on  |                     |                                    |  |  |
| _  | Exibit 25                   |   |                    |                                    |  | <del>'</del>   |                                     | xhibit 25                |   |                     |                                    |  |  |
| _  |                             | oit 25-19)                              |                    |                                    |  | S <sub>R</sub> = 50.3 mph (Exhibit 25-19)                                  |                                     |                          |   |                     |                                    |  |  |
|  |                             | oit 25-19)                              |                    |                                    |  | S <sub>0</sub> = 60.1 mph (Exhibit 25-19)                                  |                                     |                          |   |                     |                                    |  |  |
| -  |                             | oit 25-14)                              |                    |                                    |  | S = 53.1 mph (Exhibit 25-15)   |                                     |                          |   |                     |                                    |  |  |
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|  |                              |   | RAMP                     | S AND RAM                | P JUNCTI  | ONS WO   | RKSI                                    | HEET                 |  |                               |                                    |  |  |
|--|------------------------------|---|--------------------------|--------------------------|---|--|---|----------------------|--|-------------------------------|------------------------------------|--|--|
| Genera   | al Infor                     | nation                                  |                          |                          | Site Infor  |  |   |                      |  |                               |                                    |  |  |
| Analyst<br>Agency or (<br>Date Perfoi<br>Analysis Ti | Company<br>rmed<br>me Period | SEB<br>CHA<br>9/08/:<br>PM              | 2011                     | Ju<br>Ju                 | eeway/Dir of Tranction<br>Inction<br>Irisdiction<br>Inalysis Year | avel S<br>E<br>N   | Southbo<br>Exit 4 S<br>NYSDO<br>2009 Ex | T                    |  |                               |                                    |  |  |
| Project Des<br><b>Inputs</b>                         | SCHPHOH                      | EXIL 4                                  |                          |                          |   |  |   |                      |  |                               |                                    |  |  |
| Upstream A   | Adi Damn                     |   | Terrain: Leve            | l                        |   |  |   |                      |  | Downstrea                     | m Adi                              |  |  |
| ☐ Yes  | - Con III On                 |   |                          |                          |   |  |   |                      |  | Ramp                          |                                    |  |  |
| ✓ No   | □ Off                        |   |                          |                          |   |  |   |                      |  | ✓ Yes                         | ☑ On                               |  |  |
| I INO  |                              |   |                          |                          |   |  |   |                      |  | □ No                          | ☐ Off                              |  |  |
| L <sub>up</sub> =                                    | ft                           |   | S                        | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 40   | 0.0 mpl                                 | h                    |  | down                          | 3100 ft                            |  |  |
| $V_u =$  | veh/h                        |   |                          | Sketch (                 | show lanes, L <sub>A</sub> ,                                      | $L_{D}, V_{R}, V_{f}$  |   |                      |  | V <sub>D</sub> =              | 490 veh/h                          |  |  |
| Conver   | rsion to                     | pc/h Und                                | der Base (               | Conditions               |   |  |   |                      |  |                               |                                    |  |  |
| (pc  | :/h)                         | V<br>(Veh/hr)                           | PHF                      | Terrain                  | %Truck  | %Rv  | 1                                       | f <sub>HV</sub>      | f <sub>p</sub>                         | v = V/PHF                     | x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway  |                              | 2900                                    | 0.92                     | Level                    | 2   | 0  | _                                       | 990                  | 1.00                                   | 318                           |                                    |  |  |
| Ramp   |                              | 730                                     | 0.92                     | Level                    | 2   | 0  | 0.9                                     | 990                  | 1.00                                   | 80                            | 1                                  |  |  |
| UpStream<br>DownStrea                                |                              | 490                                     | 0.87                     | Level                    | 1   | 0  | 0.0                                     | 995                  | 1.00                                   | 56                            | .6                                 |  |  |
|  |                              |   | Merge Areas              | 20101                    |   | Diverge Areas  |   |                      |  |                               |                                    |  |  |
| Estima   | tion of                      | v <sub>12</sub>                         | -                        |                          |   | Estimati   | on o                                    | f v <sub>12</sub>    | _                                      |                               |                                    |  |  |
|  |                              | V <sub>12</sub> = V <sub>F</sub>        | (P <sub>EM</sub> )       |                          |   |  |   | V <sub>12</sub> =    | = V <sub>R</sub> + (V <sub>F</sub> - V | <sub>R</sub> )P <sub>ED</sub> |                                    |  |  |
| L <sub>EQ</sub> =                                    |                              | 12 1                                    | ation 25-2 or            | 25-3)                    |   | L <sub>FO</sub> =  |   |                      | Equation 25-8                          |                               |                                    |  |  |
| P <sub>FM</sub> =                                    |                              | using                                   | Equation (E              | Exhibit 25-5)            |   | P <sub>FD</sub> =  |   | 0                    | .644 using Ed                          | uation (Exh                   | ibit 25-12)                        |  |  |
| V <sub>12</sub> =                                    |                              | pc/h                                    |                          |                          |   | V <sub>12</sub> =  |   | 2                    | 335 <b>pc/h</b>                        |                               |                                    |  |  |
| V <sub>3</sub> or V <sub>av34</sub>                  |                              | pc/h (                                  | (Equation 25             | -4 or 25-5)              |   | $V_3$ or $V_{av34}$  |   | 8-                   | 49 pc/h (Equa                          | ation 25-15                   | or 25-16)                          |  |  |
| Is V <sub>3</sub> or V <sub>a</sub>                  | av34 > 2,700                 | pc/h? 🗌 Yes                             | s 🗆 No                   |                          |   | Is V <sub>3</sub> or V <sub>av3</sub>                                    | 4 > 2,70                                | 00 pc/h? [           | TYes  ✓ No                             |                               |                                    |  |  |
| Is V <sub>3</sub> or V <sub>a</sub>                  | av34 > 1.5 *                 | V <sub>12</sub> /2                      | s 🗆 No                   |                          |   | Is V <sub>3</sub> or V <sub>av3</sub>                                    | <sub>4</sub> > 1.5                      | * V <sub>12</sub> /2 | Tyes   ✓ No                            |                               |                                    |  |  |
| If Yes,V <sub>12a</sub>                              | =                            | pc/h (                                  | (Equation 25             | i-8)                     |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)                          |   |                      |  |                               |                                    |  |  |
| Capaci   | ty Che                       | cks                                     |                          |                          |   | Capacity   | / Che                                   | ecks                 |  |                               |                                    |  |  |
|  |                              | Actual                                  | C                        | apacity                  | LOS F?  |  | $\Box$                                  | Actual               |  | pacity                        | LOS F?                             |  |  |
|  |                              |   |                          |                          |   | V <sub>F</sub>   |   | 3184                 | Exhibit 25-1                           | 4 6780                        | No                                 |  |  |
| V <sub>F</sub>                                       | <b>-</b> O                   |   | Exhibit 25-7             |                          |   | $V_{FO} = V_{F}$   | - V <sub>R</sub>                        | 2383                 | Exhibit 25-1                           | 4 6780                        | No                                 |  |  |
|  |                              |   |                          |                          |   | V <sub>R</sub>   |   | 801                  | Exhibit 25-3                           | 3 2100                        | No                                 |  |  |
| Flow E   | ntering                      |   | fluence A                |                          |   | Flow En  |   |                      | rge Influen                            |                               |                                    |  |  |
| .,   |                              | Actual                                  | <del>1</del>             | Desirable                | Violation?  | .,   | _                                       | Actual               | Max Desiral                            | ſ                             | Violation?                         |  |  |
| V <sub>R</sub>                                       |                              | D-1                                     | Exhibit 25-7             | 'f no.( 5)               |   | V <sub>12</sub>  |   | 335                  | Exhibit 25-14                          | 4400:All                      | No                                 |  |  |
|  |                              |   | nination (i              |                          |   |  |   |                      | terminatio                             | •                             | -)                                 |  |  |
|  |                              | • | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |   |  | 1.                                      |                      | 0.0086 V <sub>12</sub> - 0.            | .009 L <sub>D</sub>           |                                    |  |  |
| D <sub>R</sub> =                                     | (pc/mi/l                     | ,                                       |                          |                          |   |  |   | mi/ln)               |  |                               |                                    |  |  |
| LOS =  | (Exhibit                     |   |                          |                          |   |  | •                                       | oit 25-4)            |  |                               |                                    |  |  |
| _  |                              | ination                                 |                          |                          |   | Speed D  |   |                      |  |                               |                                    |  |  |
|  | (Exibit 25                   |   |                          |                          |   | $D_s = 0.435$ (Exhibit 25-19)  |   |                      |  |                               |                                    |  |  |
| l ''   |                              | bit 25-19)                              |                          |                          |   | $S_R^{=}$ 49.9 mph (Exhibit 25-19)<br>$S_0^{=}$ 61.4 mph (Exhibit 25-19) |   |                      |  |                               |                                    |  |  |
| 0  |                              | bit 25-19)                              |                          |                          |   | 1 -  | -                                       |                      |  |                               |                                    |  |  |
| <u> </u>   |                              | bit 25-14)                              | VII D'ALC D              |                          |   | 1  |   | (Exhibit             | · · · · · · · · · · · · · · · · · · ·  |                               | 20044 2 2 2                        |  |  |
| opyright ©   | ∠007 Unive                   | rsity of Florida, A                     | All Rights Reserv        | /ed                      |   | HCS+ <sup>™</sup> V  | ersion (                                | 5.3                  | Ger                                    | nerated: 12/16/               | 2011 8:35                          |  |  |

|   | RAI                              | MPS AND            | RAMP JUNG                        | CTIONS W   | <u> /ORKSHE</u>   | <u>EET</u>       |                     |                          |                   |                                    |
|---|----------------------------------|--------------------|----------------------------------|--|---|------------------|---------------------|--------------------------|-------------------|------------------------------------|
| General Info  | rmation                          |                    |                                  | Site Infor   | mation  |                  |                     |                          |                   |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio                       | 9/08/                            |                    | Jui<br>Jui                       | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year |   |                  |                     | mp                       |                   |                                    |
| Project Description   |                                  |                    |                                  | . <b>.</b>   |   |                  |                     |                          |                   |                                    |
| Inputs  |                                  |                    |                                  |  |   |                  |                     |                          |                   |                                    |
| Jpstream Adj Ramp   |                                  | Terrain: Level     |                                  |  |   |                  |                     |                          | Downstrea<br>Ramp | am Adj                             |
| Yes O   |                                  |                    |                                  |  |   |                  |                     |                          | ☐ Yes             | ☐ On                               |
| □ No □ Ot   | f                                |                    |                                  |  |   |                  |                     | ™ No                     | ☐ Off             |                                    |
| - <sub>up</sub> = 2035  | ft                               |                    |                                  | 10.0   | L   |                  | L <sub>down</sub> = | ft                       |                   |                                    |
| $S_{FF} = 56.0 \text{ mph}$<br>$V_u = 490 \text{ veh/h}$ Sketch (show lanes, L <sub>A</sub> |                                  |                    | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$ | ю.о тр   | n   |                  | V <sub>D</sub> =    | veh/h                    |                   |                                    |
| Conversion t  | o pc/h Und                       | der Base C         | Conditions                       |  |   |                  |                     |                          |                   |                                    |
| (pc/h)  | V<br>(Veh/hr)                    | PHF                | Terrain                          | %Truck   | %Rv   | f                | :<br>HV             | f <sub>p</sub>           | v = V/PHF         | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 2700                             | 0.92               | Level                            | 2  | 0   | 0.9              | 990                 | 1.00                     | 2                 | 964                                |
| Ramp  | 1030                             | 0.93               | Level                            | 4  | 0   | 0.9              | 980                 | 1.00                     |                   | 130                                |
| UpStream  | 490                              | 0.87               | Level                            | 1  | 0   | 0.9              | 95                  | 1.00                     | !                 | 566                                |
| DownStream  |                                  | Merge Areas        |                                  |  | -   |                  |                     | Diverge Areas            |                   |                                    |
| Estimation o  |                                  | werge Areas        |                                  |  | Estimati  | ion o            |                     | Diverge Areas            | •                 |                                    |
|   | V <sub>12</sub> = V <sub>F</sub> | (P <sub>EM</sub> ) |                                  |  | 1   |                  |                     | \/ . (\/ \               | / \D              |                                    |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)   |                                  |                    |                                  |  |   |                  | $V_R + (V_F - V_F)$ |                          | `                 |                                    |
| )<br>FM =   |                                  |                    | on (Exhibit 25-5)                |  | L <sub>EQ</sub> =   |                  |                     | (Equation 2              |                   |                                    |
| <sup>1</sup> 12 =   | 1786                             |                    | on (Exhibit 25-5)                |  | P <sub>FD</sub> =   |                  |                     | using Equat              | ion (Exhibit i    | 25-12)                             |
|   |                                  |                    | n 25-4 or 25-                    |  | V <sub>12</sub> =   |                  |                     | pc/h                     |                   |                                    |
| or V <sub>av34</sub>  | 5)                               | - o, (= quao       |                                  |  | V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 25-15 or 25-16)                            |                  |                     |                          |                   |                                    |
| s $V_3$ or $V_{av34} > 2,70$  | 00 pc/h?   Ye                    | s 🗹 No             |                                  |  | Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No<br>Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No |                  |                     |                          |                   |                                    |
| s $V_3$ or $V_{av34} > 1.5$   | * V <sub>12</sub> /2             | s 🗹 No             |                                  |  |   |                  |                     |                          |                   |                                    |
| Yes,V <sub>12a</sub> =  | pc/h                             | (Equation 25       | ·8)                              |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)   |                  |                     |                          |                   |                                    |
| Capacity Che  | ecks                             |                    |                                  |  | Capacity Checks   |                  |                     |                          |                   |                                    |
|   | Actual                           | Ca                 | pacity                           | LOS F?   |   |                  | Actual              | C                        | apacity           | LOS F                              |
|   |                                  |                    |                                  |  | $V_{F}$   |                  |                     | Exhibit 25               | -14               |                                    |
| $V_{FO}$  | 4094                             | Exhibit 25-7       |                                  | No   | $V_{FO} = V_{F}$  | - V <sub>R</sub> |                     | Exhibit 25               | -14               |                                    |
|   |                                  |                    |                                  |  | $V_R$   |                  |                     | Exhibit 25               | 5-3               |                                    |
| low Enterin   | a Merae In                       | fluence A          | rea                              |  |   | terin            | a Dive              | erge Influe              | nce Are           | <del>'</del>                       |
| ,   | Actual                           |                    | esirable                         | Violation?   |   | _                | ctual               | Max Des                  |                   | Violation?                         |
| $V_{R12}$   | 2916                             | Exhibit 25-7       | 4600:All                         | No   | V <sub>12</sub>   |                  |                     | Exhibit 25-14            |                   |                                    |
| evel of Serv  | ice Detern                       | nination (i        | not F)                           |  | <del></del>   | Serv             | ice D               | eterminati               | on (if no         | t F)                               |
|   | 0.00734 v <sub>R</sub> + 0       |                    |                                  |  |   |                  |                     | 0.0086 V <sub>12</sub> - | _                 | -                                  |
| D <sub>R</sub> = 22.1 (pc/mi/ln)  |                                  |                    |                                  | $D_R = (pc/mi/ln)$                                     |   |                  |                     |                          |                   |                                    |
|   | bit 25-4)                        |                    |                                  |  |   | xhibit           | ,                   |                          |                   |                                    |
| Speed Deteri  |                                  |                    |                                  |  | Speed D   |                  |                     | on                       |                   |                                    |
| $M_{\rm S} = 0.321  (Ex$  |                                  |                    |                                  |  | <del>                                     </del>  | xhibit 2         |                     |                          |                   |                                    |
| -   | (Exhibit 25-19)                  |                    |                                  |  | 1   |                  | ,<br>ibit 25-19     | )                        |                   |                                    |
|   |                                  |                    |                                  |  |   |                  | ibit 25-19          |                          |                   |                                    |
| I "   |                                  |                    |                                  |  |   |                  |                     |                          |                   |                                    |
|   |                                  |                    |                                  | IS = mi  | nn≀⊩⊻n  | ibit 25-15       | )                   |                          |                   |                                    |

|  |                        |                            | MPS AND                      | RAMP JUNG   |                              |  | <u>:=                                    </u> |                                      |                       |  |                                      |
|--|------------------------|----------------------------|------------------------------|---|------------------------------|--|---|--------------------------------------|-----------------------|--|--------------------------------------|
| General  | Inform                 | ation                      |                              |   | Site Infor                   | mation   |   |                                      |                       |  |                                      |
| Analyst<br>Agency or Co<br>Date Perform<br>Analysis Time         | ed                     | SEB<br>CHA<br>9/08/2<br>PM | 2011                         | Fre<br>Jui<br>Jui<br>An                                 | E<br>N                       |  |   | mp                                   |                       |  |                                      |
| Project Descr  | iption E               | xit 4                      |                              |   |                              |  |   | _                                    |                       |  |                                      |
| nputs  |                        |                            |                              |   |                              |  |   |                                      |                       |  |                                      |
| Jpstream Adj   | •                      |                            | Terrain: Level               |   |                              |  |   |                                      |                       | Downstre<br>Ramp                                 | eam Adj                              |
|  | ☐ On                   |                            |                              |   |                              |  |   |                                      |                       | ✓ Yes  | ✓ On                                 |
| ™ No   | ☐ Off                  |                            |                              |   |                              |  |   |                                      |                       | □ No   | ☐ Off                                |
| -up =  | ft<br>veh/h            |                            | S                            | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$ |                              |  |   | L <sub>down</sub> = V <sub>D</sub> = | 2035 ft<br>1030 veh/h |  |                                      |
| <u>u</u>   |                        |                            |                              |   | show lanes, L <sub>A</sub> , | ${A'}$ $L_{D'}$ $V_{R'}$ $V_f$                                     |   |                                      |                       | , p  | 1030 VEII/I                          |
| <u>Convers</u>   | ion to                 |                            | der Base C                   | Conditions  |                              | ,  |   |                                      |                       |  |                                      |
| (pc/h)   |                        | V<br>(Veh/hr)              | PHF                          | Terrain   | %Truck                       | %Rv  | 1   | f <sub>HV</sub>                      | f <sub>p</sub>        | v = V/PH   | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  |                        | 2500                       | 0.92                         | Level   | 2                            | 0  | 0.9   | 990                                  | 1.00                  |  | 2745                                 |
| Ramp   |                        | 490                        | 0.87                         | Level   | 1                            | 0  | 0.9   | 995                                  | 1.00                  | <del>                                     </del> | 566                                  |
| UpStream   | $\dashv$               | 1000                       | 0.00                         | 1 1   |                              |  |   | 200                                  | 1.00                  | -  | 1100                                 |
| DownStream   |                        | 1030                       | 0.93 Merge Areas             | Level   | 4                            | 0  | 0.9   | 980                                  | 1.00<br>Diverge Area  |  | 1130                                 |
| Estimatio  | on of v                |                            | vierge Areas                 |   |                              | Estimati   | on o  |                                      | Diverge Area          | 15   |                                      |
|  |                        |                            | <u> </u>                     |   |                              | Lotimati   | 011 0   | 12                                   |                       |  |                                      |
|  |                        | $V_{12} = V_F$             |                              |   |                              |  |   | V <sub>12</sub> =                    | $V_R + (V_F -$        | $V_R)P_{FD}$                                     |                                      |
| -EQ =  |                        | (Equa                      | ation 25-2 or                | 25-3)   |                              | L <sub>EQ</sub> =  |   |                                      | (Equation 2           | 25-8 or 25-                                      | 9)                                   |
| P <sub>FM</sub> =  |                        | 0.603                      | using Equati                 | on (Exhibit 25-5)                                       |                              | P <sub>FD</sub> = using Equation (Exhibit 25-12)                   |   |                                      |                       |  |                                      |
| / <sub>12</sub> =  |                        | 1654 p                     | oc/h                         |   |                              | V <sub>12</sub> =  |   |                                      | pc/h                  |  |                                      |
| V <sub>3</sub> or V <sub>av34</sub>                              |                        |                            | oc/h (Equatio                | n 25-4 or 25-   |                              | V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 25-15 or 25-16) |   |                                      |                       | 5-16)  |                                      |
|  | . 2.700                | 5)                         |                              |   |                              | Is V <sub>3</sub> or V <sub>av34</sub> > 2,700 pc/h?  Yes No       |   |                                      |                       |  |                                      |
|  |                        | oc/h? ☐ Yes                |                              |   |                              | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                     |   |                                      |                       |  |                                      |
|  | <sub>1</sub> > 1.5 * V | <sub>12</sub> /2           |                              |   |                              | If Yes, $V_{12a} = pc/h$ (Equation 25-18)                          |   |                                      |                       |  |                                      |
| Yes,V <sub>12a</sub> =   |                        |                            | (Equation 25                 | -8)   |                              | 120  |   |                                      |                       |  |                                      |
| Capacity   | Chec                   | ks                         |                              |   | -                            | Capacity   | / Ch  | ecks                                 |                       |  |                                      |
|  |                        | Actual                     | Ca                           | pacity  | LOS F?                       | ļ  |   | Actual                               | _                     | Capacity   | LOS F?                               |
|  |                        |                            |                              |   |                              | V <sub>F</sub>   |   |                                      | Exhibit 2             | 5-14   |                                      |
| $V_{FO}$   |                        | 3311                       | Exhibit 25-7                 |   | No                           | $V_{FO} = V_{F}$   | $V_{R}$                                       |                                      | Exhibit 2             | 5-14   |                                      |
|  |                        |                            |                              |   |                              | $V_R$  |   |                                      | Exhibit 2             | 25-3   |                                      |
| Flow Ent   | erina                  | Merge In                   | fluence A                    | rea   |                              |  | terin   | a Dive                               | erge Influ            | ence Are   | <u>'</u><br>ea                       |
|  |                        | Actual                     |                              | Desirable   | Violation?                   | 1  |   | ctual                                | Max De                |  | Violation?                           |
| V <sub>R12</sub>   |                        | 2220                       | Exhibit 25-7                 | 4600:All  | No                           | V <sub>12</sub>  |   |                                      | Exhibit 25-14         | _  |                                      |
| Level of   | Servic                 | e Detern                   | nination (i                  | f not F)  |                              |  | Ser   | vice D                               | etermina              |  | ot F)                                |
|  |                        |                            | 0.0078 V <sub>12</sub> - 0.0 |   |                              |  |   |                                      |                       |  | ,                                    |
| .,   | 6.9 (pc/m              |                            | 12                           | A   |                              | $D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ $D_R = (pc/mi/ln)$       |   |                                      |                       |  |                                      |
| LOS = B (Exhibit 25-4)   |                        |                            |                              |   |                              | 25-4)  |   |                                      |                       |  |                                      |
| Speed D  | -                      | •                          |                              |   |                              | Speed D  |   |                                      | on                    |  |                                      |
| •  |                        |                            |                              |   |                              | <del>  '                                   </del>                  | khibit 2                                      |                                      | <u> </u>              |  |                                      |
| 3  | 85 (Exibit             | -                          |                              |   |                              |  |   |                                      | ١                     |  |                                      |
|  | -                      | thibit 25-19)              |                              |   |                              | ''   |   | nibit 25-19                          |                       |  |                                      |
| $s_0 = 53.$  | 9 mph (E)              | hibit 25-19)               |                              |   |                              | $S_0 = mp$   | -   | nibit 25-19                          | )                     |  |                                      |
| $S_0$ = 53.9 mph (Exhibit 25-19)<br>S = 52.6 mph (Exhibit 25-14) |                        |                            |                              | S = mr  |                              | nibit 25-15  |   |                                      |                       |  |                                      |

|   |   |                            | FREEWA                 | Y WEAV   | ING WOF  | RKSHEE   | Τ              |  |              |
|---|---|----------------------------|------------------------|----------|--|--|----------------|--|--------------|
| General   | Informat  | ion                        |                        |          | Site Info  | rmation  |                |  |              |
| Analyst<br>Agency/Con<br>Date Perforr<br>Analysis Tin                 | med   | SEB<br>CHA<br>9/08/2<br>PM | 011                    |          | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | g Location                                       | Exit 2<br>NYSE | Northbound<br>E on to 2W of<br>DOT<br>Existing   | ff           |
| Inputs  |   |                            |                        |          |  |  |                |  |              |
| Weaving nu  | e-flow speed, S<br>mber of lanes,<br>g length, L (ft) |                            | 56<br>4<br>815<br>Levi |          | Weaving type<br>Volume ratio<br>Weaving ratio              | , VR   |                | A<br>0.:<br>0.:                                  |              |
| Convers   | sions to p  | c/h Unde                   | r Base C               | ondition | ıs   |  |                |  |              |
| (pc/h)  | V   | PHF                        | Truck %                | RV %     | E <sub>T</sub>   | E <sub>R</sub>                                   | $f_{HV}$       | fp   | V            |
| $V_{o1}$  | 3930  | 0.86                       | 2                      | 0        | 1.5  | 1.2  | 0.990          | 1.00   | 4615         |
| $V_{o2}$  | 0   | 0.92                       | 2                      | 0        | 1.5  | 1.2  | 0.990          | 1.00   | 0            |
| V <sub>w1</sub>   | 910   | 0.92                       | 2                      | 0        | 1.5  | 1.2  | 0.990          | 1.00   | 999          |
| V <sub>w2</sub>   | 470   | 0.92                       | 2                      | 0        | 1.5  | 1.2  | 0.990          | 1.00   | 515          |
| V <sub>w</sub>  | 1   |                            |                        | 1514     | V <sub>nw</sub>  |  |                |  | 4615         |
| V   | 1   |                            |                        |          | I HW   | J  |                |  | 6129         |
| Weaving   | g and Noi   | n-Weavin                   | g Speeds               | <br>S    |  |  |                |  |              |
|   |   |                            | Unconstr               |          |  |  |                | strained   |              |
| <u></u>   |   | Weaving                    |                        |          | ving (i = nw)  | Weavir   | ng (i = w)     | Non-Wea  | ving ( = nw) |
| a (Exhibit 24   |   | 0.15<br>2.20               |                        |          | 035  |  |                |  |              |
| b (Exhibit 24<br>c (Exhibit 24  |   | 0.97                       |                        |          | 30   | <del> </del>                                     |                | <del>                                     </del> |              |
| d (Exhibit 24   |   | 0.97                       |                        |          | 75   | <del>                                     </del> |                | <del>                                     </del> |              |
| Weaving intensi   | ,   | 1.41                       |                        |          | 77   | 1  |                | 1  |              |
| Weaving and no<br>speeds, Si (mi/h                                    |   | 34.1                       | 2                      | 41       | .02  |  |                |  |              |
| Number of la  | anes required t                                       | for unconstrair            | ned operation,         | Nw       | 1.36   |  |                |  |              |
| 1   | umber of lanes  | . ,                        |                        |          | 1.40   | = :cn  | <i>(</i> )     |  |              |
| -   | If Nw < Nw  | ` '                        |                        |          |  |  | v (max) const  | rained operati                                   | on           |
|   |   |                            | Density,               | 39.07    | f Service,   | anu Cap  | acity          |  |              |
| Weaving segment speed, S (mi/h) Weaving segment density, D (pc/mi/ln) |   |                            | 39.22                  |          |  |  |                |  |              |
| Level of serv   |   | D (pomini)                 |                        | E        |  |  |                |  |              |
|   | base condition  | , c <sub>k</sub> (pc/h)    |                        | 6482     |  |  |                |  |              |
|   | a 15-minute fl  | <u> </u>                   | n/h)                   | 6418     |  |  |                |  |              |
| <u> </u>  | a full-hour vol                                       |                            |                        | 5620     |  |  |                |  |              |
| Notes   |   | . 11                       | •                      | 1        |  |  |                |  |              |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|   |  |  | FREEWA   | Y WEA        | /ING WOR   | KSHEE          | Т             |                 |              |  |
|---|--|--|--|--------------|--|----------------|---------------|-----------------|--------------|--|
| Genera  | l Informat   | ion  |  |              | Site Information   |                |               |                 |              |  |
| Analyst SEB Agency/Company CHA Date Performed 6/22/2011 Analysis Time Period PM |  |  | Freeway/Dir of Travel<br>Weaving Seg Location<br>Jurisdiction<br>Analysis Year |              | I-87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2009 Existing |                | f             |                 |              |  |
| Inputs  |  |  |  |              | •  |                |               |                 |              |  |
| Weaving nu  | ee-flow speed,<br>umber of lanes,<br>eg length, L (ft) |  | 56<br>4<br>810<br>Lev  |              | Weaving type<br>Volume ratio,<br>Weaving ratio                     | VR             |               | A<br>0.3<br>0.3 |              |  |
| Conver  | sions to p   | oc/h Unde  | er Base C  | ondition     |  |                |               |                 |              |  |
| (pc/h)  | V  | PHF  | Truck %  | RV %         | E <sub>T</sub>   | E <sub>R</sub> | $f_{HV}$      | fp              | V            |  |
| $V_{o1}$  | 2900   | 0.92   | 2  | 0            | 1.5  | 1.2            | 0.990         | 1.00            | 3183         |  |
| $V_{o2}$  | 0  | 0.92   | 2  | 0            | 1.5  | 1.2            | 0.990         | 1.00            | 0            |  |
| V <sub>w1</sub>   | 890  | 0.92   | 2  | 0            | 1.5  | 1.2            | 0.990         | 1.00            | 977          |  |
| $V_{w2}$  | 400  | 0.92   | 2  | 0            | 1.5  | 1.2            | 0.990         | 1.00            | 439          |  |
| V <sub>w</sub>  | 1  |  | ,  | 1416         | $V_{nw}$   |                |               | •               | 3183         |  |
| V   | 7  |  |  |              |  |                |               |                 | 4599         |  |
| Weavin  | g and No   | n-Weavin   | g Speeds   | 3            |  |                |               |                 |              |  |
|   |  |  | Unconstr   |              |  |                |               | trained         |              |  |
| - /5 - 1:1:1:0  | 4.()   | Weaving  | J (i = w)  | Non-Wea      | ving (i = nw)  |                | ng (i = w)    | 1               | ving ( = nw) |  |
| a (Exhibit 2<br>b (Exhibit 2  |  |  |  |              |  |                | 35<br>20      | <del>}</del>    | 020<br>00    |  |
| c (Exhibit 2  |  | <del>†                                      </del> |  | <del> </del> |  |                | 97            | <del></del>     | 30           |  |
| d (Exhibit 2  |  | †  |  | †            |  |                | 80            |                 | 75           |  |
| Weaving intens  | sity factor, Wi  | 1  |  |              |  | 2.             | 77            | 0.              | 37           |  |
| Weaving and n<br>speeds, Si (mi/  |  |  |  |              |  | 27             | .20           | 48              | .65          |  |
| Number of I<br>Maximum n  | lanes required<br>number of lanes                      | s, Nw (max)  | ·  |              | 1.51<br>1.40   | if Nw > No     | w (max) const | rained onerati  | on           |  |
|   |  | · · ·  |  |              | f Service,   |                |               | ranica operati  | 011          |  |
|   | egment speed,  |  |  | 39.15        |  |                | <b>-</b>      |                 |              |  |
|   | egment density,  |  |  | 29.37        |  |                |               |                 |              |  |
| Level of ser  |  |  |  | D            |  |                |               |                 |              |  |
| Capacity of   | base condition   | n, c <sub>b</sub> (pc/h)                           |  | 6136         |  |                |               |                 |              |  |
| Capacity as   | a 15-minute fl   | ow rate, c (ve                                     | h/h)   | 6075         |  |                |               |                 |              |  |
| Capacity as   | a full-hour vol  | ume, c <sub>h</sub> (veh/l                         | n)   | 5589         |  |                |               |                 |              |  |
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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such



# 

| Application                | _Input_                  | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>b</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>n</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N. S. D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> , S, D |

|   | riow kate (pc/n/i           | n)       |  |                   |                                |
|---|-----------------------------|----------|--|-------------------|--------------------------------|
| General Information                           |                             |          | Site Information                             |                   |                                |
| Analyst                                       | SEB                         |          | Highway/Direction of Travel                  | Northb            | ound I-87                      |
| Agency or Company                             | CHA                         |          | From/To                                      |                   | o Exit 4                       |
| Date Performed                                | 6/22/2011                   |          | Jurisdiction                                 | NYSDO             |                                |
| Analysis Time Period                          | AM                          |          | Analysis Year                                | 2016 N            | lo-Build                       |
| Project Description Exit 4                    |                             |          |  |                   |                                |
| ☑ Oper.(LOS                                   | )                           |          | Des.(N)                                      | □PI               | anning Data                    |
| Flow Inputs                                   |                             |          |  |                   |                                |
| Volume, V                                     | 3000                        | veh/h    | Peak-Hour Factor, PHF                        | 0.92              |                                |
| AADT  |                             | veh/day  | %Trucks and Buses, $P_{T}$                   | 2                 |                                |
| Peak-Hr Prop. of AADT, K                      |                             |          | %RVs, P <sub>R</sub>                         | 0                 |                                |
| Peak-Hr Direction Prop, D                     |                             |          | General Terrain:                             | Level             |                                |
| DDHV = AADT x K x D<br>Driver type adjustment | 1.00                        | veh/h    | Grade % Length                               | mi                |                                |
| Calculate Flow Adjust                         |                             |          | Up/Down %                                    |                   |                                |
|   | 1.00                        |          | <b>-</b>                                     |                   |                                |
| f <sub>p</sub>                                |                             |          | E <sub>R</sub>                               | 1.2               |                                |
| E <sub>T</sub>                                | 1.5                         |          | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990             |                                |
| Speed Inputs                                  |                             |          | Calc Speed Adj and FF                        | S                 |                                |
| _ane Width                                    | 12.0                        | ft       | f <sub>LW</sub>                              |                   | mi/h                           |
| Rt-Shoulder Lat. Clearance                    | 6.0                         | ft       | <b>1</b> -                                   |                   |                                |
| nterchange Density                            | 0.50                        | l/mi     | f <sub>LC</sub>                              |                   | mi/h                           |
| Number of Lanes, N                            | 3                           |          | f <sub>ID</sub>                              |                   | mi/h                           |
| FFS (measured)                                | 56.0                        | mi/h     | f <sub>N</sub>                               |                   | mi/h                           |
| Base free-flow Speed, BFFS                    |                             | mi/h     | FFS  | 56.0              | mi/h                           |
| OS and Performance                            |                             |          | Design (N)                                   |                   |                                |
|   |                             |          | Design (N)                                   |                   |                                |
| Operational (LOS)                             |                             |          | Design LOS                                   |                   |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$       | x f <sub>HV</sub> x<br>1098 | pc/h/ln  |  | £                 |                                |
| (p)   | 1030                        | ролин    | $V_p = (V \text{ or DDHV}) / (PHF x N x)$    | T <sub>HV</sub> X | pc/h                           |
| 3   | 56.0                        | mi/h     | $f_p$ )                                      |                   | •                              |
| $D = v_p / S$                                 | 19.6                        | pc/mi/ln | S  |                   | mi/h                           |
| .os <sup>*</sup>                              | С                           | ,        | $D = v_p / S$                                |                   | pc/mi/ln                       |
|   |                             |          | Required Number of Lanes, N                  |                   |                                |
| Glossary                                      |                             |          | Factor Location                              |                   |                                |
| I - Number of lanes                           | S - Speed                   |          | E  | ····              |                                |
| / - Hourly volume                             | D - Density                 |          | E <sub>R</sub> - Exhibits23-8, 23-10         |                   | f <sub>LW</sub> - Exhibit 23-4 |
| - Flow rate                                   | FFS - Free-flow             | speed    | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1  | 1                 | f <sub>LC</sub> - Exhibit 23-5 |
| .OS - Level of service                        | BFFS - Base fre             | •        | f <sub>p</sub> - Page 23-12                  |                   | f <sub>N</sub> - Exhibit 23-6  |
|   |                             | opood    | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-2  | 2, 23-3           | f <sub>ID</sub> - Exhibit 23-7 |
| DHV - Directional design ho                   | ur volume                   |          | р р  | , == •            | ID EXHIBIT 20 /                |

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### Speed (mith) Free-Flow Speed FFS = 75 midt Application Input Output 70 miih 70 Operational (LOS) FFS, N, vn LOS, S, D 65 miih 60 miih Design (N) FFS, LOS, V. N, S, D 60 Average Passenger-Car 55 mith Design (v<sub>p</sub>) FFS, LOS, N Vp. S. D 50 Planning (LOS) FFS, N, AADT LOS, S, D Planning (M) FFS, LOS, AADT N, S, D 40 Planning (v<sub>n</sub>) FFS, LOS, N v<sub>p</sub>, S, D 30 400 008 1200 1600 2000 2400 Flow Rate (pc/h/lin) General Information Site Information Highway/Direction of Travel Analyst Southbound I-87 SEB Agency or Company From/To Exit 4 to Exit 2 CHA Date Performed Jurisdiction NYSDOT 6/22/2011 Analysis Time Period Analysis Year 2016 No-Build AM Project Description Exit 4 Oper.(LOS) □ Des.(N) □ Planning Data Flow Inputs Volume, V 5200 veh/h Peak-Hour Factor, PHF 0.92 AADT veh/day %Trucks and Buses, P<sub>⊤</sub> 2 Peak-Hr Prop. of AADT, K %RVs, P<sub>R</sub> 0 Peak-Hr Direction Prop. D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments $E_R$ 1.00 1.2 $E_T$ 1.5 0.990 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Speed Inputs Calc Speed Adj and FFS Lane Width 12.0 ft $f_{LW}$ mi/h ft Rt-Shoulder Lat. Clearance 6.0 $f_{LC}$ mi/h 0.50 I/mi Interchange Density $f_{ID}$ mi/h 3 Number of Lanes, N $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 1903 pc/h/ln v<sub>n</sub> = (V or DDHV) / (PHF x N x f<sub>HV</sub> x f<sub>p</sub>) pc/h $f_p)$ 55.7 mi/h mi/h $D = v_p / S$ 34.2 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS D Required Number of Lanes, N Factor Location Glossary - Number of lanes S - Speed E<sub>p</sub> - Exhibits23-8, 23-10 f<sub>IW</sub> - Exhibit 23-4 V - Hourly volume D - Density $E_{\tau}$ - Exhibits 23-8, 23-10, 23-11 f<sub>IC</sub> - Exhibit 23-5 - Flow rate FFS - Free-flow speed f<sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed f<sub>ID</sub> - Exhibit 23-7 LOS, S, FFS, v<sub>p</sub> - Exhibits 23-2, 23-3 DDHV - Directional design hour volume

**BASIC FREEWAY SEGMENTS WORKSHEET** 

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| <u>Application</u>         | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>p</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>n</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (N)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | V <sub>o</sub> , S, D |

| General Information                     |                            |   | Site Information                             |                   |                                |
|---|----------------------------|---|--|-------------------|--------------------------------|
| Analyst                                 | SEB                        |   | Highway/Direction of Travel                  | Northb            | ound I-87                      |
| Agency or Company                       | CHA                        |   | From/To                                      |                   | off to Exit 4 on               |
| Date Performed                          | 9/09/2011                  |   | Jurisdiction                                 | NYSDO             |                                |
| Analysis Time Period                    | AM                         |   | Analysis Year                                | 2016 N            | lo-Build                       |
| Project Description Exit 4              |                            |   |  |                   |                                |
| ☑ Oper.(LOS)                            | )                          | 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - | Des.(N)                                      | □PI               | anning Data                    |
| Flow Inputs                             |                            |   |  |                   |                                |
| Volume, V                               | 2250                       | veh/h                                   | Peak-Hour Factor, PHF                        | 0.92              |                                |
| AADT                                    |                            | veh/day                                 | %Trucks and Buses, P <sub>T</sub>            | 2                 |                                |
| Peak-Hr Prop. of AADT, K                |                            |   | %RVs, P <sub>R</sub>                         | 0                 |                                |
| Peak-Hr Direction Prop, D               |                            |   | General Terrain:                             | Level             |                                |
| $DDHV = AADT \times K \times D$         |                            | veh/h                                   | Grade % Length                               | mi                |                                |
| Driver type adjustment                  | 1.00                       |   | Up/Down %                                    |                   |                                |
| Calculate Flow Adjusti                  |                            |   |  |                   |                                |
| $f_p$                                   | 1.00                       |   | E <sub>R</sub>                               | 1.2               | ···-                           |
| E <sub>T</sub>                          | 1.5                        |   | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990             |                                |
| Speed Inputs                            |                            |   | Calc Speed Adj and FF                        | S                 |                                |
| Lane Width                              | 12.0                       | ft                                      | f <sub>LW</sub>                              |                   | :/h                            |
| Rt-Shoulder Lat. Clearance              | 6.0                        | ft                                      |  |                   | mi/h                           |
| Interchange Density                     | 0.50                       | I/mi                                    | f <sub>LC</sub>                              |                   | mi/h                           |
| Number of Lanes, N                      | 3                          |   | f <sub>ID</sub>                              |                   | mi/h                           |
| FFS (measured)                          | 56.0                       | mi/h                                    | f <sub>N</sub>                               |                   | mi/h                           |
| Base free-flow Speed, BFFS              |                            | mi/h                                    | FFS  | 56.0              | mi/h                           |
| LOS and Performance                     | Measures                   |   | Design (N)                                   |                   |                                |
|   |                            |   | Design (N)                                   |                   |                                |
| Operational (LOS)                       |                            |   | Design LOS                                   |                   |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$ | x f <sub>HV</sub> x<br>823 | n a /l- /l                              | ľ  |                   |                                |
| f <sub>p</sub> )                        | 823                        | pc/h/ln                                 | $v_p = (V \text{ or DDHV}) / (PHF x N x)$    | τ <sub>HV</sub> x | pc/h                           |
| 5                                       | 56.0                       | mi/h                                    | f <sub>p</sub> )                             |                   | po                             |
| $D = v_p / S$                           | 14.7                       | pc/mi/ln                                | S  |                   | mi/h                           |
| LOS                                     | В                          | Pommi                                   | $D = v_p / S$                                |                   | pc/mi/ln                       |
|   | <i>-</i>                   |   | Required Number of Lanes, N                  |                   |                                |
| Glossary                                |                            |   | Factor Location                              |                   |                                |
| N - Number of lanes                     | S - Speed                  |   | F 5-1-1-00 0 00 10                           |                   |                                |
| √ - Hourly volume                       | D - Density                |   | E <sub>R</sub> - Exhibits23-8, 23-10         |                   | f <sub>LW</sub> - Exhibit 23-4 |
| , - Flow rate                           | FFS - Free-flow            | speed                                   | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1  | 1                 | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                   | BFFS - Base fre            |   | f <sub>p</sub> - Page 23-12                  |                   | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho            |                            | opood                                   | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-2  | 2, 23-3           | f <sub>ID</sub> - Exhibit 23-7 |
| טאטע - Directional design ho            | ur volume                  |   | p  |                   | ID =                           |

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## **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mith) <u>FFS = 75 midt</u> 70 midt F<u>ree-</u>Fl<u>ow Spred</u> 70 65 miih 60 mith 60 55 min 30 400 200 1200 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>o</sub> , S, D |

|                                    |  | Site Information   |            |   |
|------------------------------------|--|--|------------|---|
|                                    |  | one intermation  |            |   |
| SEB                                |  | Highway/Direction of Travel  | Southbo    | ound I-87   |
| CHA                                |  | From/To  | Exit 5 or  | n to Exit 4 on  |
| 12/09/2011                         |  | Jurisdiction   | NYSDO      | T   |
| AM                                 |  | Analysis Year  | 2016 No    | o-Build   |
|                                    |  |  |            |   |
|                                    |  | Des.(N)  | □ Pla      | anning Data   |
|                                    |  |  |            |   |
| 4650                               |  | ·  |            |   |
|                                    | veh/day  | •  | 2          |   |
|                                    |  | •  | 0          |   |
|                                    |  |  | Level      |   |
| 1.00                               | ven/n  |  | mı         |   |
|                                    |  | Ор/ДОЖП 78   |            |   |
|                                    |  | F_   | 12         |   |
|                                    |  | _  |            |   |
| 1.3                                |  |  |            |   |
|                                    |  | Calc Speed Adj and FF  | <u>s</u>   |   |
|                                    | ft   | f <sub>LW</sub>  |            | mi/h  |
| 6.0                                | ft   |  |            | mi/h  |
| 0.50                               | l/mi   | 1.   |            | mi/h  |
| 3                                  |  |  |            |   |
| 56.0                               | mi/h   |  |            | mi/h  |
|                                    | mi/h   | FFS  | 56.0       | mi/h  |
| leasures                           |  | Design (N)   |            |   |
|                                    |  |  |            | <u>*************************************</u>                    |
| _                                  |  | Design LOS   |            |   |
| <sup>f</sup> HV X 1702             | pc/h/ln  |  | : f x      |   |
| ,,,,,                              | po//////   | · ·  | 'HV ^      | pc/h  |
| 56.0                               | mi/h   |  |            | ! В   |
| 30.4                               | pc/mi/ln   |  |            | mi/h  |
| D                                  |  | l F  |            | pc/mi/ln  |
|                                    |  |  |            |   |
|                                    |  | Factor Location  |            |   |
| S - Speed                          |  | F Exhibits 23-8 23-10  |            | f _ Evhibit 22.4  |
| D - Density                        |  | <b>'</b> '   | 14         | f <sub>LW</sub> - Exhibit 23-4                                  |
|                                    |  | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1  | : <b>I</b> | f <sub>LC</sub> - Exhibit 23-5                                  |
| FFS - Free-flow                    | / speea  |  |            |   |
| FFS - Free-flow<br>BFFS - Base fro | •  | f <sub>p</sub> - Page 23-12<br>LOS, S, FFS, v <sub>p</sub> - Exhibits 23-  |            | f <sub>N</sub> - Exhibit 23-6<br>f <sub>ID</sub> - Exhibit 23-7 |
| f                                  | 12/09/2011<br>AM  4650  1.00 ents 1.00 1.5  12.0 6.0 0.50 3 56.0  leasures  f <sub>HV</sub> X 1702 56.0 30.4 D S - Speed | 12/09/2011 AM  4650 veh/h veh/day  veh/h 1.00 ents 1.00 1.5  12.0 ft 6.0 ft 0.50 l/mi 3 56.0 mi/h mi/h  leasures  fHv X 1702 pc/h/ln 56.0 mi/h 30.4 pc/mi/ln D | 12/09/2011 | 12/09/2011  |

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## **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mi/h) FFS = <u>75 mith</u> 70 mith F<u>roe-</u>Flow Speed 70 65 miih 60 miih 60 55 milh 50 30 400 800 0 1200 1600 2000 2400 Flow Rate (pc/h/lin)

| <u>Application</u>         | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>B</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>n</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (N)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>o</sub> , S, D |

| General Information                     |                     |   | Site Information                                      |                    |                                |
|---|---------------------|---|---|--------------------|--------------------------------|
| Analyst                                 | SEB                 |   | Highway/Direction of Travel                           | Northbo            | ound I-87                      |
| Agency or Company                       | CHA                 |   | From/To   | Exit 4 to          | Exit 5                         |
| Date Performed                          | 6/22/2011           |   | Jurisdiction  | NYSDC              | )T                             |
| Analysis Time Period                    | AM                  | *************************************** | Analysis Year   | 2016 N             | o-Build                        |
| Project Description Exit 4              |                     |   |   |                    |                                |
| ি Oper.(LOS)                            | )                   |   | Des.(N)   | □ Pla              | anning Data                    |
| Flow Inputs                             |                     |   |   |                    |                                |
| Volume, V                               | 2750                | veh/h                                   | Peak-Hour Factor, PHF                                 | 0.92               |                                |
| AADT                                    |                     | veh/day                                 | %Trucks and Buses, P <sub>T</sub>                     | 2                  |                                |
| Peak-Hr Prop. of AADT, K                |                     |   | %RVs, P <sub>R</sub>                                  | 0                  |                                |
| Peak-Hr Direction Prop, D               |                     |   | General Terrain:                                      | Level              |                                |
| DDHV = AADT x K x D                     | 4.00                | veh/h                                   | Grade % Length  | mi                 |                                |
| Driver type adjustment                  | 1.00                |   | Up/Down %   |                    |                                |
| Calculate Flow Adjusti                  |                     |   |   |                    |                                |
| f <sub>p</sub>                          | 1.00                |   | E <sub>R</sub>  | 1.2                |                                |
| E <sub>T</sub>                          | 1.5                 |   | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$          | 0.990              |                                |
| Speed Inputs                            |                     |   | Calc Speed Adj and FF                                 | S                  |                                |
| Lane Width                              | 12.0                | ft                                      | f <sub>LW</sub>                                       |                    | mi/h                           |
| Rt-Shoulder Lat. Clearance              | 6.0                 | ft                                      |   |                    |                                |
| Interchange Density                     | 0.50                | I/mi                                    | f <sub>LC</sub>                                       |                    | mi/h                           |
| Number of Lanes, N                      | 3                   |   | f <sub>ID</sub>                                       |                    | mi/h                           |
| FFS (measured)                          | 56.0                | mi/h                                    | f <sub>N</sub>  |                    | mi/h                           |
| Base free-flow Speed, BFFS              |                     | mi/h                                    | FFS   | 56.0               | mi/h                           |
| LOS and Performance                     | Measures            | 111711                                  | Dosign (N)  |                    |                                |
| LOO and I citofinance                   | Weasures            |   | Design (N)  |                    |                                |
| Operational (LOS)                       |                     |   | Design (N)  |                    |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$ | x f <sub>HV</sub> x |   | Design LOS  |                    |                                |
| f <sub>p</sub> )                        | 1006                | pc/h/ln                                 | $v_p = (V \text{ or DDHV}) / (PHF \times N \times N)$ | cf <sub>HV</sub> x | pc/h                           |
| ρ'<br>S                                 | 56.0                | mi/h                                    | f <sub>p</sub> )                                      |                    | μο/π                           |
|   | 18.0                | pc/mi/ln                                | s   |                    | mi/h                           |
| $D = v_p / S$                           |                     | ροπιλιπ                                 | $D = v_p / S$   |                    | pc/mi/ln                       |
| LOS                                     | В                   |   | Required Number of Lanes, N                           |                    | <u>[</u> -                     |
| Glossary                                |                     |   | Factor Location                                       |                    |                                |
| N - Number of lanes                     | S - Speed           |   |   |                    |                                |
| √ - Hourly volume                       | D - Density         |   | E <sub>R</sub> - Exhibits23-8, 23-10                  |                    | f <sub>LW</sub> - Exhibit 23-4 |
| · ·                                     | FFS - Free-flow     | , speed                                 | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1           | 11                 | f <sub>LC</sub> - Exhibit 23-5 |
| P                                       |                     | •                                       | f <sub>p</sub> - Page 23-12                           |                    | f <sub>N</sub> - Exhibit 23-6  |
| OS - Level of service                   | BFFS - Base from    | ee-flow speed                           | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-            | 2. 23-3            | f <sub>ID</sub> - Exhibit 23-7 |
| DDHV - Directional design ho            | ur volume           |   | , , , , р   | , •                | 10 =                           |

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## **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (milh) Free-Flow Spred FFS = 75 minh Application Input Output 70 mich 70 Operational (LOS) FFS, N, v<sub>D</sub> 65 mid LOS, S, D 60 mich Design (N) FFS, LOS, V<sub>D</sub> 60 N, S, D 55 miih Design (v<sub>o</sub>) FFS, LOS, N v<sub>p</sub>. S. D 50 Planning (LOS) FFS, N, AADT LOS, S, D Planning (M) FFS, LOS, AADT N, S, D 40 -Planning (kg) FFS, LOS, N v<sub>p</sub>. S, D 30 008 1200 1600 2000 2400 Flow Rate (pc/h/lin) General Information Site Information Analyst SEB Highway/Direction of Travel Southbound I-87 Agency or Company CHA From/To Exit 5 to Exit 4 Date Performed 6/22/2011 Jurisdiction NYSDOT Analysis Time Period AM Analysis Year 2016 No-Build Project Description Exit 4 Oper.(LOS) Des.(N) Planning Data Flow Inputs Volume, V 4400 veh/h Peak-Hour Factor, PHF 0.92 AADT veh/day %Trucks and Buses, P<sub>+</sub> 2 Peak-Hr Prop. of AADT, K %RVs, P<sub>R</sub> 0 Peak-Hr Direction Prop, D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments 1.00 $f_p$ ER 1.2 $E_{T}$ 1.5 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ 0.990 Speed Inputs Calc Speed Adj and FFS ane Width 12.0 ft $f_{LW}$ mi/h

| Rt-Shoulder Lat. Clearance  | 6.0   | ft               | LVV   | ******  |
|---|---|------------------|---|---|
| Interchange Density   | 0.50  | l/mi             | f <sub>LC</sub>   | mi/h  |
| Number of Lanes, N  | 3   |                  | f <sub>ID</sub>   | mi/h  |
| FFS (measured)  | 56.0  | mi/h             | f <sub>N</sub>  | mi/h  |
| Base free-flow Speed, BFFS  | ;   | mi/h             | FFS 56.0  | mi/h  |
| LOS and Performance   | Measures  |                  | Design (N)  |   |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N<br>f_)                     | x f <sub>HV</sub> x 1610                              | pc/h/ln          | <u>Design (N)</u><br>Design LOS<br>v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x                      | nc/h  |
| r <sub>p</sub> /<br>S<br>D = v <sub>p</sub> / S<br>LOS                                  | 56.0<br>28.8<br>D                                     | mi/h<br>pc/mi/ln | f <sub>p</sub> )<br>S<br>D = v <sub>p</sub> / S<br>Required Number of Lanes, N                                      | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary  |   |                  | Factor Location   |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service | S - Speed D - Density FFS - Free-flow BFFS - Base fre | •                | E <sub>R</sub> - Exhibits23-8, 23-10<br>E <sub>T</sub> - Exhibits 23-8, 23-10, 23-11<br>f <sub>p</sub> - Page 23-12 | f <sub>LW</sub> - Exhibit 23-4<br>f <sub>LC</sub> - Exhibit 23-5<br>f <sub>N</sub> - Exhibit 23-6 |

BFFS - Base free-flow speed

DDHV - Directional design hour volume

LOS - Level of service

LOS, S, FFS, v<sub>p</sub> - Exhibits 23-2, 23-3

f<sub>ID</sub> - Exhibit 23-7

## **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passengos-Car Speed (mith) FFS = 75 mith 70 mith Free-Flow Speed 70 65 mid 60 mish 55 min 50 30 <del>|</del> 400 200 1600 1200 2000 2400 Flow Rate (pc/h/lin)

| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, [             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> . S. D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S. C             |
| Planning (M)               | FFS, LOS, AADT           | N. S. D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> . S, D |

|  | How Rate (pc/h/            | ln)      |  |                   |                                |
|--|----------------------------|----------|--|-------------------|--------------------------------|
| General Information                            |                            |          | Site Information                             |                   |                                |
| Analyst  | SEB                        |          | Highway/Direction of Travel                  | Northbo           | ound I-87                      |
| Agency or Company                              | CHA                        |          | From/To                                      | Exit 5 to         |                                |
| Date Performed                                 | 6/22/2011                  |          | Jurisdiction                                 | NYSDC             | )T                             |
| Analysis Time Period                           | AM                         |          | Analysis Year                                | 2016 N            | o-Build                        |
| Project Description Exit 4                     |                            |          |  |                   |                                |
| Oper.(LOS)                                     | )                          |          | Des.(N)                                      | □ PI              | anning Data                    |
| Flow Inputs                                    |                            |          |  |                   |                                |
| Volume, V                                      | 2500                       | veh/h    | Peak-Hour Factor, PHF                        | 0.92              |                                |
| AADT   |                            | veh/day  | %Trucks and Buses, P <sub>T</sub>            | 2                 |                                |
| Peak-Hr Prop. of AADT, K                       |                            |          | %RVs, P <sub>R</sub>                         | 0                 |                                |
| Peak-Hr Direction Prop, D                      |                            |          | General Terrain:                             | Level             |                                |
| DDHV = AADT x K x D                            | 1.00                       | veh/h    | Grade % Length                               | mi                |                                |
| Oriver type adjustment  Calculate Flow Adjusti | 1.00                       |          | Up/Down %                                    |                   |                                |
|  |                            |          |  |                   |                                |
| f <sub>p</sub>                                 | 1.00                       |          | $E_R$  | 1.2               |                                |
| E <sub>T</sub>                                 | 1.5                        |          | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990             |                                |
| Speed Inputs                                   |                            |          | Calc Speed Adj and FF                        | S                 |                                |
| ane Width                                      | 12.0                       | ft       | $f_{LW}$                                     |                   | mi/h                           |
| Rt-Shoulder Lat. Clearance                     | 6.0                        | ft       |  |                   |                                |
| nterchange Density                             | 0.50                       | I/mi     | f <sub>LC</sub>                              |                   | mi/h                           |
| Number of Lanes, N                             | 4                          |          | f <sub>ID</sub>                              |                   | mi/h                           |
| FFS (measured)                                 | 56.0                       | mi/h     | f <sub>N</sub>                               |                   | mi/h                           |
| Base free-flow Speed, BFFS                     |                            | mi/h     | FFS  | 56.0              | mi/h                           |
| OS and Performance                             | Measures                   |          | Design (N)                                   |                   |                                |
|  |                            |          | Design (N)                                   |                   |                                |
| Operational (LOS)                              |                            |          | Design LOS                                   |                   |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$        | x f <sub>HV</sub> x<br>686 | pc/h/ln  | _  | f v               |                                |
| p)   | 000                        | рс/п/п   | $v_p = (V \text{ or DDHV}) / (PHF x N x)$    | I <sub>HV</sub> X | pc/h                           |
| 8  | 56.0                       | mi/h     | f <sub>p</sub> )                             |                   | ·                              |
| $0 = v_p / S$                                  | 12.3                       | pc/mi/ln | S  |                   | mi/h                           |
| os °   | В                          | i        | $D = v_p / S$                                |                   | pc/mi/ln                       |
|  |                            |          | Required Number of Lanes, N                  |                   |                                |
| Glossary                                       |                            |          | Factor Location                              |                   |                                |
| I - Number of lanes                            | S - Speed                  |          | E Evhibita 22.0.00.40                        |                   | f = 1.11.100 +                 |
| / - Hourly volume                              | D - Density                |          | E <sub>R</sub> - Exhibits23-8, 23-10         |                   | f <sub>LW</sub> - Exhibit 23-4 |
| - Flow rate                                    | FFS - Free-flow            | / speed  | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1  | 1                 | f <sub>LC</sub> - Exhibit 23-5 |
| .OS - Level of service                         | BFFS - Base from           | •        | f <sub>p</sub> - Page 23-12                  |                   | f <sub>N</sub> - Exhibit 23-6  |
|  |                            | opoou    | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-2  | 2, 23-3           | f <sub>ID</sub> - Exhibit 23-7 |
| DHV - Directional design ho                    | ur volume                  |          |  | _,                | ID - EXHIBIT 23-7              |

## **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mith) FFS = 75 mish 70 mish Free-Flow Speed 70 65 milh 60 miih 60 55 mith 50 30 400 800 1200 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, I             |
| Design (N)                 | FFS, LOS, v <sub>n</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, I             |
| Planning (N)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> , S, D |

| General Information                       |                             |              | Site Information                                      |           |                                |
|---|-----------------------------|--------------|---|-----------|--------------------------------|
| Analyst                                   | SEB                         |              | Highway/Direction of Travel                           | Southb    | ound I-87                      |
| Agency or Company                         | CHA                         |              | From/To   | Exit 6 to |                                |
| Date Performed                            | 6/22/2011                   |              | Jurisdiction  | NYSDC     |                                |
| Analysis Time Period                      | AM                          |              | Analysis Year   | 2016 No   | o-Build                        |
| Project Description Exit 4                |                             |              |   |           |                                |
| Oper.(LOS)                                |                             | a            | Des.(N)   | □Pla      | anning Data                    |
| Flow Inputs                               |                             |              |   |           |                                |
| Volume, V                                 | 6100                        | veh/h        | Peak-Hour Factor, PHF                                 | 0.92      |                                |
| AADT                                      |                             | veh/day      | %Trucks and Buses, $P_T$                              | 2         |                                |
| Peak-Hr Prop. of AADT, K                  |                             |              | %RVs, P <sub>R</sub>                                  | 0         |                                |
| Peak-Hr Direction Prop, D                 |                             |              | General Terrain:                                      | Level     |                                |
| DDHV = AADT x K x D                       | 4.00                        | veh/h        | Grade % Length  | mi        |                                |
| Driver type adjustment                    | 1.00                        |              | Up/Down %   |           |                                |
| Calculate Flow Adjustn                    |                             |              |   |           |                                |
| f <sub>p</sub>                            | 1.00                        |              | E <sub>R</sub>  | 1.2       |                                |
| E <sub>T</sub>                            | 1.5                         |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$          | 0.990     |                                |
| Speed Inputs                              |                             |              | Calc Speed Adj and FF                                 | S         |                                |
| Lane Width                                | 12.0                        | ft           | f <sub>LW</sub>                                       |           | mi/h                           |
| Rt-Shoulder Lat. Clearance                | 6.0                         | ft           | i i   |           |                                |
| Interchange Density                       | 0.50                        | l/mi         | f <sub>LC</sub>                                       |           | mi/h                           |
| Number of Lanes, N                        | 4                           |              | f <sub>ID</sub>                                       |           | mi/h                           |
| FFS (measured)                            | 56.0                        | mi/h         | f <sub>N</sub>  |           | mi/h                           |
| Base free-flow Speed, BFFS                |                             | mi/h         | FFS   | 56.0      | mi/h                           |
| LOS and Performance I                     | Measures                    |              | Design (N)  |           |                                |
|   |                             | *****        | Design (N)  |           |                                |
| Operational (LOS)                         |                             |              | Design LOS  |           |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N x)$ | : f <sub>HV</sub> x<br>1674 | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF \times N \times N)$ | fv        |                                |
| (p)                                       | 1014                        | ролин        |   | 'HV X     | pc/h                           |
| 3   | 56.0                        | mi/h         | $f_p$ )   |           |                                |
| $D = v_p / S$                             | 29.9                        | pc/mi/ln     | S   |           | mi/h                           |
| _os <sup>°</sup>                          | D                           | •            | $D = v_p / S$   |           | pc/mi/ln                       |
|   |                             |              | Required Number of Lanes, N                           |           |                                |
| Glossary                                  |                             |              | Factor Location                                       |           |                                |
| N - Number of lanes                       | S - Speed                   |              | F Fyhihite23-8 23-10                                  |           | f Evhibit 22.4                 |
| / - Hourly volume                         | D - Density                 |              | E <sub>R</sub> - Exhibits 23-8, 23-10                 |           | f <sub>LW</sub> - Exhibit 23-4 |
| ∕ <sub>p</sub> - Flow rate                | FFS - Free-flow             | speed        | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1           | 1         | f <sub>LC</sub> - Exhibit 23-5 |
| OS Lovel of coming                        | BFFS - Base fre             | o flow and   | f <sub>p</sub> - Page 23-12                           |           | f <sub>N</sub> - Exhibit 23-6  |
| OS - Level of service                     | DI I 3 - Dase II e          | se-now speed | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-2           |           | f <sub>ID</sub> - Exhibit 23-7 |

|   | <u>RAI</u>                      | MPS AND                                 | RAMP JUNG                                | CTIONS W   | <u>ORKSHE</u>   | EET  |                      |                                      |                                 |                                    |
|---|---------------------------------|---|--|--|---|--|----------------------|--------------------------------------|---------------------------------|------------------------------------|
| General Info  | rmation                         |   |  | Site Infor   | mation  |  |                      |                                      |                                 |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 9/08/                           |   | Jui<br>Jui                               | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | f Travel Northbound I-87 Exit 2W On-Ramp NYSDOT 2016 No-Build |  |                      |                                      |                                 |                                    |
| Project Description   |                                 |   | All                                      | aiysis i cai   |   | 2010 N   | J-Dullu              |                                      |                                 |                                    |
| nputs   | LAIL I                          |   |  |  |   |  |                      |                                      |                                 |                                    |
| Jpstream Adj Ramp   | )                               | Terrain: Level                          |  |  |   |  |                      |                                      | Downstrea<br>Ramp               | am Adj                             |
| Yes O   | n                               |   |  |  |   |  |                      |                                      | ☐ Yes                           | □ On                               |
| □ No   □ O  | ff                              |   |  |  |   |  |                      |                                      | ™ No                            | ☐ Off                              |
| - <sub>up</sub> = 1100  | ft                              |   |  |  |   |  |                      |                                      | L <sub>down</sub> =             | ft                                 |
| / <sub>u</sub> = 620 v  | reh/h                           | S                                       | $_{FF} = 56.0 \text{ mph}$<br>Sketch ( s | show lanes, L <sub>A</sub> ,                           | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$                              | 0.0 mpl  | h                    |                                      | V <sub>D</sub> =                | veh/h                              |
| Conversion  | to pc/h Und                     | der Base C                              | Conditions                               |  |   |  |                      |                                      |                                 |                                    |
| (pc/h)  | V<br>(Veh/hr)                   | PHF                                     | Terrain                                  | %Truck   | %Rv   | f  | HV                   | f <sub>p</sub>                       | v = V/PHF                       | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 2650                            | 0.92                                    | Level                                    | 2  | 0   | 0.9  | 90                   | 1.00                                 | 2                               | 909                                |
| Ramp  | 350                             | 0.92                                    | Level                                    | 2  | 0   | 0.9  | 90                   | 1.00                                 |                                 | 384                                |
| UpStream  | 620                             | 0.92                                    | Level                                    | 2  | 0   | 0.9  | 90                   | 1.00                                 |                                 | 581                                |
| DownStream  | <u> </u>                        | Merge Areas                             |  |  |   |  |                      | Divorgo Arono                        | <u> </u>                        |                                    |
| Estimation o  |                                 | Estimati                                | ion o                                    |  | Diverge Areas   | •  |                      |                                      |                                 |                                    |
|   |                                 | (D )                                    |  |  |   |  |                      |                                      |                                 |                                    |
|   | $V_{12} = V_F$                  | • | 5 0 05 0\                                |  |   |  | V <sub>12</sub> =    | V <sub>R</sub> + (V <sub>F</sub> - V | / <sub>R</sub> )P <sub>FD</sub> |                                    |
| ·EQ =   |                                 | (Equation 2                             |  |  | L <sub>EQ</sub> =   |  |                      | (Equation 2                          | 5-8 or 25-9                     | )                                  |
| P <sub>FM</sub> =   |                                 |   | on (Exhibit 25-5)                        |  | P <sub>FD</sub> =   |  |                      | using Equat                          | ion (Exhibit                    | 25-12)                             |
| 12 =  | 1749                            |   |  |  | V <sub>12</sub> =   |  |                      | pc/h                                 |                                 |                                    |
| <sub>3</sub> or V <sub>av34</sub>                                     | 1160 p                          | pc/h (Equatio                           | n 25-4 or 25-                            |  | $V_3$ or $V_{av34}$   |  |                      | pc/h (Equation                       | 1 25-15 or 25                   | 16)                                |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,7                           | ,                               | s 🗹 No                                  |  |  | Is V <sub>3</sub> or V <sub>av3</sub>                         | 34 > 2,70  | 00 pc/h?             | ☐ Yes ☐ N                            | 0                               |                                    |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5                           |                                 |   |  |  | Is V <sub>3</sub> or V <sub>av3</sub>                         | <sub>34</sub> > 1.5                              | * V <sub>12</sub> /2 | ☐ Yes ☐ N                            | 0                               |                                    |
| Yes,V <sub>12a</sub> =  | · <del>-</del>                  | (Equation 25                            | -8)                                      |  | If Yes,V <sub>12a</sub> =                                     | :  |                      | pc/h (Equati                         | ion 25-18)                      |                                    |
| Capacity Ch   |                                 | · ·                                     | ,  |  | Capacity Checks   |  |                      |                                      |                                 |                                    |
|   | Actual                          | Ca                                      | pacity                                   | LOS F?   | 10.17.11013   |  | Actual               | С                                    | apacity                         | LOS F                              |
|   |                                 |   |  |  | V <sub>F</sub>  |  |                      | Exhibit 25                           |                                 |                                    |
| $V_{FO}$  | 3293                            | Exhibit 25-7                            |  | No   | $V_{FO} = V_{F}$  | - V <sub>D</sub>                                 |                      | Exhibit 25                           | -14                             |                                    |
| го  |                                 |   |  |  | V <sub>R</sub>  |  |                      | Exhibit 25                           |                                 |                                    |
| Flow Enterin  | ng Merge In                     | fluence A                               |  | <u> </u>   |   | torin  | a Dive               | erge Influe                          |                                 | <u> </u>                           |
| IOW LINGIIII  | Actual                          |   | Desirable                                | Violation?   | I IOW EII   |  | ctual                | Max Des                              |                                 | Violation?                         |
| V <sub>R12</sub>  | 2133                            | Exhibit 25-7                            | 4600:All                                 | No   | V <sub>12</sub>   | <del>1                                    </del> |                      | Exhibit 25-14                        |                                 |                                    |
| Level of Serv   |                                 |   |  |  | <del></del>   | Serv   | rice D               | eterminati                           | on (if no                       | t F)                               |
|   | + 0.00734 v <sub>R</sub> + 0    |   |  |  |   |  |                      | 0.0086 V <sub>12</sub> -             | <del></del>                     | <del> ,</del>                      |
| 11  | c/mi/ln)                        | 12                                      | М  |  |   | c/mi/lr  |                      | 12                                   | U                               |                                    |
|   | ibit 25-4)                      |   |  |  |   | xhibit   | ,                    |                                      |                                 |                                    |
| Speed Deter   |                                 |   |  |  | Speed D   |  |                      | on                                   |                                 |                                    |
|   |                                 |   |  |  | <del>                                     </del>              | xhibit 2   |                      | <del></del>                          |                                 |                                    |
| 3   | (ibit 25-19)<br>(Eybibit 25-10) |   |  |  | 1   |  | ibit 25-19           | )                                    |                                 |                                    |
|   | (Exhibit 25-19)                 |   |  |  |   |  | ibit 25-19           |                                      |                                 |                                    |
| $S_0 = 53.6 \text{ mph}$  | (Exhibit 25-19)                 |   |  |  |   |  |                      | •                                    |                                 |                                    |
|   | (Exhibit 25-14)                 |   |  |  | S = mi  | nh /Evh  | ibit 25-15           | 1                                    |                                 |                                    |

|   |                    | IVAIAIL             | S AND RAM    |   |                                     |                     | · · ·             |  |                               |                                    |  |  |
|---|--------------------|---------------------|--------------|---|-------------------------------------|---------------------|-------------------|--|-------------------------------|------------------------------------|--|--|
| General Info  |                    |                     |              | Site Infor  |                                     |                     |                   |  |                               |                                    |  |  |
| Analyst<br>Agency or Compar<br>Date Performed<br>Analysis Time Peri | 9/08               |                     | J            | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year | Exit 4 NB Off<br>NYSDOT             |                     |                   |  |                               |                                    |  |  |
| Project Description   |                    |                     |              | inalysis i cai  |                                     | 20101               | io-builu          |  |                               |                                    |  |  |
| Inputs  | LAIL               |                     |              |   |                                     |                     |                   |  |                               |                                    |  |  |
| Upstream Adj Ram  | р                  | Terrain: Leve       |              |   |                                     |                     |                   |  | Downstrea                     | m Adj                              |  |  |
| □ Yes □ C   | <b>)</b> n         |                     |              |   |                                     |                     |                   |  | Ramp                          | ✓ On                               |  |  |
| ™ No □ C  | Off                |                     |              |   |                                     |                     |                   |  | □ No                          | ☐ Off                              |  |  |
| L <sub>up</sub> = ft  |                    | S <sub>FR</sub> = 4 | 0.0 mr       | oh  |                                     | L <sub>down</sub> = | 2660 ft           |  |                               |                                    |  |  |
| V <sub>u</sub> = veh  |                    |                     |              | show lanes, L <sub>A</sub>                                  |                                     |                     |                   |  | V <sub>D</sub> =              | 670 veh/                           |  |  |
| Conversion  |                    | der Base (          | Conditions   |   |                                     | ,                   |                   |  |                               |                                    |  |  |
| (pc/h)  | V<br>(Veh/hr)      | PHF                 | Terrain      | %Truck  | %Rv                                 |                     | $f_{HV}$          | f <sub>p</sub>                         | v = V/PHF                     | x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway   | 3000               | 0.92                | Level        | 2   | 0                                   | 0                   | .990              | 1.00                                   | 329                           | 93                                 |  |  |
| Ramp  | 740                | 0.82                | Level        | 2   | 0                                   | 0                   | .990              | 1.00                                   | 91                            | 1                                  |  |  |
| UpStream  |                    | 1                   |              |   |                                     | ┿                   |                   |  | 72/                           |                                    |  |  |
| DownStream  | 670                | 0.92<br>Merge Areas | Level        | 2   | 0                                   | 0                   | .990              | 1.00                                   | 73                            | 6                                  |  |  |
| Estimation  |                    | Fotimet             | ion          |   | Diverge Areas                       |                     |                   |  |                               |                                    |  |  |
| Estimation of   | or v <sub>12</sub> |                     |              |   | Estimati                            | ion c               | ) V 12            |  |                               |                                    |  |  |
|   | $V_{12} = V_{F}$   | (P <sub>FM</sub> )  |              |   |                                     |                     | V <sub>12</sub> = | = V <sub>R</sub> + (V <sub>F</sub> - V | <sub>R</sub> )P <sub>FD</sub> |                                    |  |  |
| L <sub>EQ</sub> =   | (Equ               | ation 25-2 or       | 25-3)        |   | L <sub>EQ</sub> =                   |                     | (                 | Equation 25-8                          | 3 or 25-9)                    |                                    |  |  |
| P <sub>FM</sub> =   | using              | Equation (E         | xhibit 25-5) |   | P <sub>FD</sub> =                   |                     | 0                 | .636 using Ed                          | uation (Exh                   | bit 25-12)                         |  |  |
| V <sub>12</sub> =   | pc/h               |                     |              |   | V <sub>12</sub> =                   |                     |                   | 425 <b>pc/h</b>                        | •                             |                                    |  |  |
| V <sub>3</sub> or V <sub>av34</sub>                                 | •                  | (Equation 25        | -4 or 25-5)  |   | V <sub>3</sub> or V <sub>av34</sub> |                     |                   | 68 pc/h (Equa                          | ation 25-15                   | or 25-16                           |  |  |
| Is $V_3$ or $V_{av34} > 2,7$  |                    |                     | ,            |   |                                     | > 2.7               |                   | Yes 🗹 No                               |                               | 0. 20 .0,                          |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                        |                    |                     |              |   |                                     |                     |                   | Yes ✓ No                               |                               |                                    |  |  |
| If Yes,V <sub>12a</sub> =   | · <del>=</del>     | (Equation 25        | -8)          |   | If Yes, V <sub>12a</sub> =          | , ,                 | 12                |  | 25-18)                        |                                    |  |  |
| Capacity Ch   |                    | (Equation 20        | - 0)         |   |                                     |                     |                   |  |                               |                                    |  |  |
| Сараспу Сп  | Actual             | 1 0                 | apacity      | LOS F?  | Capacity Checks   Actual   Capacity |                     |                   |  |                               |                                    |  |  |
|   | Actual             |                     | арасну       | LUSF?   | \/                                  | Actual              |                   | Exhibit 25-1                           | 1                             | LOS F                              |  |  |
| ,,  |                    |                     |              |   | V <sub>F</sub>                      |                     | 3293              |  |                               | No                                 |  |  |
| V <sub>FO</sub>   |                    | Exhibit 25-7        |              |   | $V_{FO} = V_{F}$                    | - V <sub>R</sub>    | 2382              | Exhibit 25-1                           | 4 6780                        | No                                 |  |  |
|   |                    |                     |              |   | V <sub>R</sub>                      |                     | 911               | Exhibit 25-3                           | 3 2100                        | No                                 |  |  |
| Flow Enterin  | ng Merge Ir        | ıfluence A          | rea          |   | Flow En                             | terir               | ng Dive           | rge Influen                            | ce Area                       |                                    |  |  |
|   | Actual             | 1                   | Desirable    | Violation?  |                                     | 1                   | Actual            | Max Desiral                            |                               | Violation                          |  |  |
| $V_{R12}$   |                    | Exhibit 25-7        |              |   | V <sub>12</sub>                     |                     | 2425              | Exhibit 25-14                          | 4400:All                      | No                                 |  |  |
| Level of Ser  | vice Deterr        | mination (i         | f not F)     | -   | Level of                            | Ser                 | vice De           | terminatio                             | n (if not l                   | <del></del>                        |  |  |
| $D_R = 5.475 + 0$   |                    | •                   |              |   | [ [                                 | D <sub>R</sub> = 4  | 4.252 + 0         | .0086 V <sub>12</sub> - 0.             | 009 L <sub>D</sub>            |                                    |  |  |
| $D_R = (pc/m)$  |                    | 12                  | ^            |   |                                     |                     | :/mi/ln)          | 12                                     | D                             |                                    |  |  |
| LOS = (Exhi   | bit 25-4)          |                     |              |   | LOS = C                             | (Exhi               | bit 25-4)         |  |                               |                                    |  |  |
| Speed Deter   |                    |                     |              |   | Speed D                             | •                   |                   | on                                     |                               |                                    |  |  |
| •   |                    |                     |              |   |                                     |                     | xhibit 25         |  |                               |                                    |  |  |
| M <sub>S</sub> = (Exibit  |                    |                     |              |   |                                     | ,                   | n (Exhibit        | *                                      |                               |                                    |  |  |
|   | thibit 25-19)      |                     |              |   | **                                  | -                   |                   |  |                               |                                    |  |  |
| S <sub>0</sub> = mph (Ex  | thibit 25-19)      |                     |              |   | 1.                                  | -                   | n (Exhibit        |  |                               |                                    |  |  |
| S = mph (Exhibit 25-14)   |                    |                     |              |   |                                     |                     |                   | 25-15)                                 |                               |                                    |  |  |

|  |                            | MPS AND  | RAMP JUNG                |   |  | <u> </u>  |  |                                 |                                      |  |  |
|--|----------------------------|--|--------------------------|---|--|---|--|---------------------------------|--------------------------------------|--|--|
| General Infor  | mation                     |  |                          | Site Infor  | mation   |   |  |                                 |                                      |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | 9/08/                      |  | Ju<br>Ju                 | eeway/Dir of Tr<br>nction<br>risdiction<br>nalysis Year |  | Northbound I-8<br>Exit 4 NB On-F<br>NYSDOT<br>2016 No-Build |  |                                 |                                      |  |  |
| Project Description  |                            |  | All                      | iaiysis i cai   | •  | 2010 NO-Dullu   |  |                                 |                                      |  |  |
| Inputs   | LAIT 1                     |  |                          |   |  |   |  |                                 |                                      |  |  |
| Upstream Adj Ramp  |                            | Terrain: Leve                                    | I                        |   |  |   |  | Downstre<br>Ramp                | eam Adj                              |  |  |
| ☐ Yes ☐ Or   | ו                          |  |                          |   |  |   |  | ✓ Yes                           | □ On                                 |  |  |
| ☑ No ☐ Of  | f                          |  |                          |   |  |   |  | □ No                            | ✓ Off                                |  |  |
| - <sub>up</sub> = ft   |                            | S  | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4                              | 0.0 mph   |  | L <sub>down</sub> =             | 3500 ft                              |  |  |
| $V_{\rm u} = {\rm veh/h}$  | 1                          |  | Sketch (s                | show lanes, L <sub>A</sub> ,                            | $L_{D'}V_{R'}V_{f}$                              |   |  | V <sub>D</sub> =                | 460 veh/h                            |  |  |
| Conversion t   | o pc/h Und                 | der Base (                                       | Conditions               |   |  |   |  |                                 |                                      |  |  |
| (pc/h)   | V<br>(Veh/hr)              | PHF  | Terrain                  | %Truck  | %Rv  | f <sub>HV</sub>   | f <sub>p</sub>                                   | v = V/PH                        | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway  | 2250                       | 0.92   | Level                    | 2   | 0  | 0.990   | 1.00   |                                 | 2470                                 |  |  |
| Ramp   | 670                        | 0.92   | Level                    | 2   | 0  | 0.990   | 1.00   | 736                             |                                      |  |  |
| UpStream   |                            | <del>                                     </del> |                          |   |  |   | <del>                                     </del> |                                 |                                      |  |  |
| DownStream   | 460                        | 0.96   | Level                    | 2   | 0  | 0.990   | 1.00   |                                 | 484                                  |  |  |
| <b></b>  |                            | Merge Areas                                      |                          |   | <b>F</b> - 1 : 1 :                               |   | Diverge Are                                      | as                              |                                      |  |  |
| Estimation o   | 1 V 12                     |  |                          |   | ∟stimati   | ion of v <sub>12</sub>                                      |  |                                 |                                      |  |  |
|  | $V_{12} = V_{F}$           | (P <sub>FM</sub> )                               |                          |   |  | V <sub>12</sub>   | = V <sub>R</sub> + (V <sub>F</sub> -             | V <sub>R</sub> )P <sub>FD</sub> |                                      |  |  |
| -EQ =  | 2350.66                    | (Equation  | 25-2 or 25-3)            |   | L <sub>EQ</sub> =                                |   | (Equation  | 25-8 or 25-                     | 9)                                   |  |  |
| P <sub>FM</sub> =  | 0.603                      | using Equat                                      | ion (Exhibit 25-5)       |   | P <sub>FD</sub> =                                |   | using Equ  | ation (Exhibi                   | t 25-12)                             |  |  |
| / <sub>12</sub> =  | 1489                       |  | ,                        |   | V <sub>12</sub> =                                |   | pc/h   |                                 |                                      |  |  |
| / <sub>3</sub> or V <sub>av34</sub>                                    |                            | •  | n 25-4 or 25-5)          |   | V <sub>3</sub> or V <sub>av34</sub>              |   | •  | on 25-15 or 2                   | 5-16)                                |  |  |
| 3 av34<br>Is V <sub>3</sub> or V <sub>av34</sub> > 2,70                |                            |  |                          |   |  | > 2 700 pc/h  | ? TYes   |                                 | ,                                    |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,70                          |                            |  |                          |   |  | •   | ☐ Yes ☐  |                                 |                                      |  |  |
|  |                            |  | . 0/                     |   | 0 0.0  |   |  |                                 |                                      |  |  |
| f Yes,V <sub>12a</sub> =   |                            | (Equation 25                                     | 9-8)                     |   | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18) |   |  |                                 |                                      |  |  |
| Capacity Che   | ,                          | 1 0  |                          | 1   | Capacity Checks                                  |   |  |                                 |                                      |  |  |
|  | Actual                     |  | apacity                  | LOS F?  | <u> </u>   | Actu  | <u></u>  | Capacity                        | LOS F                                |  |  |
|  |                            |  |                          |   | V <sub>F</sub>                                   | _   | Exhibit :  | _                               |                                      |  |  |
| $V_{FO}$   | 3206                       | Exhibit 25-7                                     |                          | No  | $V_{FO} = V_{F}$                                 | - V <sub>R</sub>  | Exhibit :  | 25-14                           |                                      |  |  |
|  |                            |  |                          |   | $V_R$  |   | Exhibit  | 25-3                            |                                      |  |  |
| Flow Entering  | g Merae In                 | fluence A  | rea                      | -   | Flow En  | terina Div  | /erge Influ                                      | ience Are                       | <del></del>                          |  |  |
|  | Actual                     |  | Desirable                | Violation?  |  | Actual  |  | esirable                        | Violation?                           |  |  |
| V <sub>R12</sub>   | 2225                       | Exhibit 25-7                                     | 4600:All                 | No  | V <sub>12</sub>                                  |   | Exhibit 25-1                                     | 4                               |                                      |  |  |
| Level of Serv  | <u> </u>                   |  |                          | 1   |  | Service   | Determina  |                                 | ot F)                                |  |  |
|  | 0.00734 v <sub>R</sub> + 0 | •  |                          |   | +  |   | - 0.0086 V <sub>12</sub>                         |                                 | ,                                    |  |  |
| $D_{R} = 3.473$  |                            |  | A                        |   |  | c/mi/ln)  | 12   | D                               |                                      |  |  |
| .OS = B (Exhi  | •                          |  |                          |   |  | xhibit 25-4)  |  |                                 |                                      |  |  |
| Speed Deteri   |                            |  |                          |   | <u>`</u>   | etermina  | tion   |                                 |                                      |  |  |
| •  |                            |  |                          |   | <del>` '</del>                                   |   |  |                                 |                                      |  |  |
| $M_{S} = 0.285  (Exi$  | -                          |  |                          |   | _ ·  | xhibit 25-19)   | 10)  |                                 |                                      |  |  |
|  | (Exhibit 25-19)            |  |                          |   |  | oh (Exhibit 25-   |  |                                 |                                      |  |  |
| $S_0 = 54.3 \text{ mph}$   | (Exhibit 25-19)            |  |                          |   | $S_0 = m_i$                                      | oh (Exhibit 25-   | 19)  |                                 |                                      |  |  |
|  | (Exhibit 25-14)            |  |                          | S = mr  | oh (Exhibit 25-                                  |   |  |                                 |                                      |  |  |

|   |                              | RAMP                     | S AND RAM              | IP JUNCTI  | ONS WO   | RKS                                    | HEET                 |  |   |                                    |  |  |
|---|------------------------------|--------------------------|------------------------|--|--|--|----------------------|--|---|------------------------------------|--|--|
| General Info  | rmation                      |                          |                        | Site Infor   |  |  |                      |  |   |                                    |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | SEB<br>CHA<br>9/08/<br>d AM  | 2011                     | Ju<br>Ju               | reeway/Dir of Tranction<br>Inction<br>Irisdiction<br>Inalysis Year |  | Northbo<br>Exit 5 N<br>NYSDC<br>2016 N | T                    |  |   |                                    |  |  |
| Project Description Inputs  | EXII 4                       |                          |                        |  |  |  |                      |  |   |                                    |  |  |
| Upstream Adj Ramp   | <u> </u>                     | Terrain: Leve            |                        |  |  |  |                      |  | Downstrea   | m Adj                              |  |  |
| ✓ Yes ✓ Oi  |                              |                          |                        |  |  |  |                      |  | Ramp  | -                                  |  |  |
| □No □ Ot  | ff                           |                          |                        |  |  |  |                      |  | Yes     No     No | ☐ On<br>☐ Off                      |  |  |
| _   |                              |                          |                        |  |  |  |                      |  | L <sub>down</sub> =   | ft                                 |  |  |
| $L_{up} = 3500$ $V_{u} = 670 \text{ V}$                               | show lanes, L <sub>A</sub> , | S <sub>FR</sub> = 3      | 35.0 mp                | h  |  | V <sub>D</sub> =                       | veh/h                |  |   |                                    |  |  |
| Conversion t  | SHOW Idires, EA              | -D' R' f'                |                        |  |  |  |                      |  |   |                                    |  |  |
| (pc/h)  | V                            | PHF                      | Terrain                | %Truck   | %Rv  |  | f <sub>HV</sub>      | fp                                     | v = V/PHF   | x f <sub>uv</sub> x f <sub>n</sub> |  |  |
| Freeway   | (Veh/hr)<br>2750             | 0.92                     | Level                  | 2  | 0  | +-                                     | 990                  | 1.00                                   | 30^   | <u> </u>                           |  |  |
| Ramp  | 460                          | 0.96                     | Level                  | 2  | 0  | 0.                                     | 990                  | 1.00                                   | 48  | 4                                  |  |  |
| UpStream  | 670                          | 0.92                     | Level                  | 2  | 0  | 0.                                     | 990                  | 1.00                                   | 736   |                                    |  |  |
| DownStream  |                              | Merge Areas              |                        |  |  |  |                      |  |   |                                    |  |  |
| <u> </u>  |                              |                          |                        |  | Diverge Areas                                    |  |                      |  |   |                                    |  |  |
| Estimation o  | t v <sub>12</sub>            |                          |                        |  | Estimat  | ion o                                  | of V <sub>12</sub>   |  |   |                                    |  |  |
|   | $V_{12} = V_F$               | (P <sub>FM</sub> )       |                        |  |  |  | V <sub>12</sub> =    | = V <sub>R</sub> + (V <sub>F</sub> - V | <sub>R</sub> )P <sub>FD</sub>   |                                    |  |  |
| L <sub>EQ</sub> =   | (Equ                         | ation 25-2 or            | 25-3)                  |  | L <sub>EQ</sub> =                                |  | 7                    | 100.61 (Equat                          | ion 25-8 or   | 25-9)                              |  |  |
| P <sub>FM</sub> =   | using                        | Equation (E              | xhibit 25-5)           |  | P <sub>FD</sub> =                                |  | 0                    | .726 using Ed                          | uation (Exhi  | bit 25-12)                         |  |  |
| V <sub>12</sub> =   | pc/h                         |                          |                        |  | V <sub>12</sub> =                                |  | 2                    | 325 <b>pc/h</b>                        |   |                                    |  |  |
| V <sub>3</sub> or V <sub>av34</sub>                                   | pc/h                         | (Equation 25             | -4 or 25-5)            |  | V <sub>3</sub> or V <sub>av34</sub>              |  | 6                    | 94 pc/h (Equa                          | ation 25-15   | or 25-16)                          |  |  |
| Is $V_3$ or $V_{av34} > 2,70$   |                              |                          |                        |  |  | <sub>34</sub> > 2,7                    |                      | TYes ✓ No                              |   |                                    |  |  |
| Is $V_3$ or $V_{av34} > 1.5$  |                              |                          |                        |  | Is V <sub>3</sub> or V <sub>av</sub>             | 3 <sub>1</sub> > 1.5                   | * V <sub>12</sub> /2 | Tyes  ✓ No                             |   |                                    |  |  |
| 1637  | · <del>-</del>               | (Equation 25             | -8)                    |  | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18) |  |                      |  |   |                                    |  |  |
| Capacity Che  |                              |                          |                        |  | Capacity Checks                                  |  |                      |  |   |                                    |  |  |
|   | Actual                       | C                        | apacity                | LOS F?   | <u> </u>   | Actu                                   |                      | Ca                                     | pacity  | LOS F                              |  |  |
|   |                              |                          |                        |  | V <sub>F</sub>                                   |  | 3019                 | Exhibit 25-1                           | 4 6780  | No                                 |  |  |
| V <sub>FO</sub>   |                              | Exhibit 25-7             |                        |  | $V_{FO} = V_{F}$                                 | - V <sub>R</sub>                       | 2535                 | Exhibit 25-1                           | 4 6780  | No                                 |  |  |
|   |                              |                          |                        |  | V <sub>R</sub>                                   |  | 484                  | Exhibit 25-3                           | 3 2000  | No                                 |  |  |
| Flow Enterin  | a Merae In                   | fluence A                | rea                    |  | Flow En  | iterin                                 | a Dive               | rge Influen                            | ce Area   |                                    |  |  |
|   | Actual                       | ľ                        | Desirable              | Violation?   |  | 1                                      | Actual               | Max Desiral                            |   | Violation                          |  |  |
| V <sub>R12</sub>  |                              | Exhibit 25-7             |                        |  | V <sub>12</sub>                                  | 2                                      | 2325                 | Exhibit 25-14                          | 4400:All  | No                                 |  |  |
| Level of Serv   | rice Detern                  | nination (i              | f not F)               | •  |  | Ser                                    | vice De              | terminatio                             | n (if not l   | =)                                 |  |  |
| $D_R = 5.475 + 0$   | .00734 v <sub>R</sub> +      | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>∆</sub> |  |  |  |                      | .0086 V <sub>12</sub> - 0              | •   | -                                  |  |  |
| D <sub>R</sub> = (pc/mi   |                              | 12                       | ,,                     |  |  | • • •                                  | /mi/ln)              | 12                                     | 5   |                                    |  |  |
|   | it 25-4)                     |                          |                        |  |  |  | oit 25-4)            |  |   |                                    |  |  |
| Speed Deteri  |                              |                          |                        |  | Speed L  | •                                      |                      | on                                     |   |                                    |  |  |
| $M_S = $ (Exibit 2  |                              |                          |                        |  |  |  | xhibit 25            |  |   |                                    |  |  |
|   | nibit 25-19)                 |                          |                        |  |  |  | (Exhibit             |  |   |                                    |  |  |
|   |                              |                          |                        |  |  | -                                      | (Exhibit             |  |   |                                    |  |  |
| C /   |                              | 1 0                      | ווין דיי               | ו (באוווטונ  | 20 10)   |  |                      |  |   |                                    |  |  |
| $S_0 = mph (Ext)$<br>S = mph (Ext)                                    | nibit 25-14)                 |                          |                        |  | S = 51   | 17 mnh                                 | (Exhibit             | 25 15)                                 |   |                                    |  |  |

|   |                                  | IVAINI (                 | S AND RAM              |   |                                     | 1110                                 |                    |  |                    |                                    |  |  |
|---|----------------------------------|--------------------------|------------------------|---|-------------------------------------|--------------------------------------|--------------------|--|--------------------|------------------------------------|--|--|
| General Info  | mation                           |                          |                        | Site Infor  |                                     |                                      |                    |  |                    |                                    |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 9/08/                            |                          | J                      | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year | <u> </u>                            | Southb<br>Exit 2W<br>NYSDC<br>2016 N | / Off              |  |                    |                                    |  |  |
| Project Description   |                                  |                          |                        | ,   |                                     |                                      |                    |  |                    |                                    |  |  |
| Inputs  |                                  |                          |                        |   |                                     |                                      |                    |  |                    |                                    |  |  |
| Upstream Adj Ramp   |                                  | Terrain: Leve            |                        |   |                                     |                                      |                    |  | Downstrea<br>Ramp  | m Adj                              |  |  |
| ☐ Yes ☐ Oi  |                                  |                          |                        |   |                                     |                                      |                    |  | ✓ Yes              | ☑ On                               |  |  |
| ✓ No ☐ Of   | f                                |                          |                        |   |                                     |                                      |                    |  | □ No               | ☐ Off                              |  |  |
| L <sub>up</sub> = ft  |                                  | S <sub>FR</sub> = 4      | 0 0 mn                 | h   |                                     | L <sub>down</sub> =                  | 1300 ft            |  |                    |                                    |  |  |
| $V_u = veh/h$   | show lanes, L <sub>A</sub>       |                          | 0.0 1110               |   |                                     | V <sub>D</sub> =                     | 370 veh/           |  |                    |                                    |  |  |
| Conversion t  | o pc/h Un                        | der Base (               | Conditions             |   |                                     |                                      |                    |  |                    |                                    |  |  |
| (pc/h)  | V<br>(Veh/hr)                    | PHF                      | Terrain                | %Truck  | %Rv                                 |                                      | f <sub>HV</sub>    | f <sub>p</sub>                         | v = V/PHF          | x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway   | 5200                             | 0.92                     | Level                  | 2   | 0                                   | _                                    | 990                | 1.00                                   | 570                |                                    |  |  |
| Ramp  | 780                              | 0.92                     | Level                  | 2   | 0                                   | 0.                                   | 990                | 1.00                                   | 85                 | 6                                  |  |  |
| UpStream<br>DownStream  | 370                              | 0.92                     | Level                  | 2   | 0                                   | 0                                    | 990                | 1.00                                   | 406                |                                    |  |  |
| Downstream  |                                  | Merge Areas              | Level                  | 2   | 0                                   | 0.                                   |                    | Diverge Areas                          | 40                 | 0                                  |  |  |
| Estimation of v <sub>12</sub>   |                                  |                          |                        |   |                                     | on o                                 | of v <sub>12</sub> | <u> </u>                               |                    |                                    |  |  |
|   | V <sub>12</sub> = V <sub>F</sub> | (P.,,)                   |                        |   | 1                                   |                                      |                    | = V <sub>R</sub> + (V <sub>F</sub> - V | _)P                |                                    |  |  |
| L <sub>EQ</sub> =   |                                  | ation 25-2 or            | 25-3)                  |   | L <sub>EQ</sub> =                   |                                      |                    | Equation 25-8                          |                    |                                    |  |  |
| P <sub>FM</sub> =   |                                  | Equation (E              |                        |   | P <sub>FD</sub> =                   |                                      |                    | .578 using Ed                          |                    | bit 25-12)                         |  |  |
| V <sub>12</sub> =   | pc/h                             | (                        |                        |   | V <sub>12</sub> =                   |                                      |                    | 661 pc/h                               | juanori (Emi       | DI 20 12)                          |  |  |
| V <sub>3</sub> or V <sub>av34</sub>                                   | •                                | (Equation 25             | -4 or 25-5)            |   | V <sub>3</sub> or V <sub>av34</sub> |                                      |                    | 048 pc/h (Equ                          | ation 25-15        | or 25-16                           |  |  |
| Is $V_3$ or $V_{av34} > 2,70$   |                                  |                          | ,                      |   |                                     | , > 2,7                              |                    | Yes 🗹 No                               | 0.0011 20 10       | 0. 20 .                            |  |  |
| Is $V_3$ or $V_{av34} > 1.5$  |                                  |                          |                        |   |                                     |                                      |                    | Yes ✓ No                               |                    |                                    |  |  |
| If Yes,V <sub>12a</sub> =   | · <del>-</del>                   | (Equation 25             | -8)                    |   | If Yes, V <sub>12a</sub> =          | •                                    |                    | oc/h (Equation                         | 25-18)             |                                    |  |  |
| Capacity Che  |                                  |                          | ,                      |   | Capacity Checks                     |                                      |                    |  |                    |                                    |  |  |
|   | Actual                           | С                        | apacity                | LOS F?  | 1                                   |                                      | Actual             | Ca                                     | pacity             | LOS F                              |  |  |
|   |                                  | 1                        |                        |   | V <sub>F</sub>                      | T                                    | 5709               | Exhibit 25-1                           | 4 6780             | No                                 |  |  |
| V <sub>FO</sub>   |                                  | Exhibit 25-7             |                        |   | $V_{FO} = V_{F}$                    | - V <sub>R</sub>                     |                    |  | 4 6780             | No                                 |  |  |
|   |                                  |                          |                        |   | V <sub>R</sub>                      |                                      | 856                | Exhibit 25-3                           | 3 2100             | No                                 |  |  |
| Flow Enterin  | a Merae In                       | fluence Δ                | <br>rea                |   | <del>- ``</del>                     | terin                                |                    | rge Influen                            |                    |                                    |  |  |
|   | Actual                           | 1                        | Desirable              | Violation?  |                                     |                                      | Actual             | Max Desiral                            |                    | Violation                          |  |  |
| V <sub>R12</sub>  |                                  | Exhibit 25-7             |                        |   | V <sub>12</sub>                     | 3                                    | 3661               | Exhibit 25-14                          | 4400:All           | No                                 |  |  |
| Level of Serv   | ice Deterr                       | nination (i              | f not F)               |   |                                     | Ser                                  | vice De            | terminatio                             | n (if not l        | <del>5)</del>                      |  |  |
| $D_R = 5.475 + 0$   | 00734 v <sub>R</sub> +           | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub> |   |                                     | $O_R = 4$                            | 1.252 + 0          | .0086 V <sub>12</sub> - 0.             | 009 L <sub>D</sub> |                                    |  |  |
| D <sub>R</sub> = (pc/mi   | ľn)                              |                          |                        |   | D <sub>R</sub> = 33                 | .0 (pc                               | /mi/ln)            |  |                    |                                    |  |  |
| LOS = (Exhib  | it 25-4)                         |                          |                        |   | LOS = D                             | (Exhil                               | oit 25-4)          |  |                    |                                    |  |  |
| Speed Deteri  | nination                         |                          |                        |   | Speed D                             | eter)                                | minati             | on                                     |                    |                                    |  |  |
| $M_S = $ (Exibit 2  |                                  | $D_{s} = 0.4$            | 140 (E                 | xhibit 25   | -19)                                |                                      |                    |  |                    |                                    |  |  |
| · ·   | ibit 25-19)                      |                          |                        |   | S <sub>R</sub> = 49                 | .8 mph                               | (Exhibit           | 25-19)                                 |                    |                                    |  |  |
|   |                                  |                          |                        |   |                                     | 3 mnh                                | (Exhibit           | 25-19)                                 |                    |                                    |  |  |
| $S_0 = mph (Exh$  | IIDIL 25-19)                     |                          |                        |   | $S_0 = 57$                          | .o mpi                               |                    | 20 10)                                 |                    |                                    |  |  |

|  |                                  | KAIVIF                   | S AND RAM              |   |  | KNOI                                    |                        |   |                    |   |  |
|--|----------------------------------|--------------------------|------------------------|---|--|---|------------------------|---|--------------------|---|--|
| General Infor  | mation                           |                          |                        | Site Infor  |  |   |                        |   |                    |   |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioc | 9/08/<br>i AM                    |                          | Ju<br>Ju               | eeway/Dir of Tr<br>nction<br>risdiction<br>nalysis Year |  | Southbo<br>Exit 4 S<br>NYSDO<br>2016 No | T                      |   |                    |   |  |
| Project Description  | EXII 4                           |                          |                        |   |  |   |                        |   |                    |   |  |
| Inputs   |                                  | Terrain: Level           |                        |   |  |   |                        |   | D                  | A .l:   |  |
| Upstream Adj Ramp  |                                  |                          |                        |   |  |   |                        |   | Downstrea<br>Ramp  | m Auj   |  |
|  |                                  |                          |                        |   |  |   |                        |   |                    | ✓ On  |  |
| Mo ☐ Of  | Ī                                |                          |                        |   |  |   |                        |   |                    | Off   |  |
| $L_up$ = ft $V_u$ = veh/h  |                                  | S                        | FF = 56.0 mph          |   | S <sub>FR</sub> = 4                                  | 10.0 mph                                | 1                      |   |                    | 3100 ft<br>370 veh/ł                          |  |
|  |                                  |                          |                        | show lanes, L <sub>A</sub>                              | , L <sub>D</sub> , V <sub>R</sub> , V <sub>f</sub> ) |   |                        |   |                    |   |  |
| Conversion to  | o pc/n Und<br>I ∨                | der Base C               | conditions             |   | <del>1</del>   | 1                                       |                        | 1   |                    |   |  |
| (pc/h)   | v<br>(Veh/hr)                    | PHF                      | Terrain                | %Truck  | %Rv  | f                                       | HV                     | f <sub>p</sub>                                    | v = V/PHF          | x f <sub>HV</sub> x f <sub>p</sub>            |  |
| Freeway  | 5400                             | 0.92                     | Level                  | 2   | 0 0.990 1.0  |   |                        | 1.00  | 592                |   |  |
| Ramp   | 1020                             | 0.92                     | Level                  | 2   | 0  | 0.9                                     | 990                    | 1.00  | 112                | 20  |  |
| UpStream<br>DownStream   | 370                              | 0.93                     | Level                  | 3   | 0  | 0.9                                     | 985                    | 1.00  | 40                 | 4   |  |
|  |                                  | Merge Areas              | 2070.                  | ,   |  | <u> </u>                                |                        | Diverge Areas                                     |                    |   |  |
| Estimation of  | F V <sub>12</sub>                |                          |                        |   | Estimati   | ion o                                   | f v <sub>12</sub>      |   |                    |   |  |
|  | V <sub>12</sub> = V <sub>F</sub> | (P <sub>EM</sub> )       |                        |   |  |   | V <sub>12</sub> =      | V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | P <sub>ED</sub>    |   |  |
| L <sub>EQ</sub> =  |                                  | ation 25-2 or            | 25-3)                  |   | L <sub>EQ</sub> =                                    |   |                        | Equation 25-8                                     |                    |   |  |
| P <sub>FM</sub> =  | using                            | Equation (E              | xhibit 25-5)           |   | P <sub>FD</sub> =                                    |   | 0.                     | 560 using Eq                                      | uation (Exhi       | ibit 25-12)                                   |  |
| V <sub>12</sub> =  | pc/h                             |                          |                        |   | V <sub>12</sub> =                                    |   |                        | 314 pc/h  | •                  |   |  |
| V <sub>3</sub> or V <sub>av34</sub>                                    | pc/h                             | (Equation 25             | -4 or 25-5)            |   | V <sub>3</sub> or V <sub>av34</sub>                  |   | 21                     | 14 pc/h (Equ                                      | ation 25-15        | or 25-16                                      |  |
| Is $V_3$ or $V_{av34} > 2,70$  | 00 pc/h?                         | s 🗆 No                   |                        |   | Is V <sub>3</sub> or V <sub>av3</sub>                | 34 > 2,70                               |                        | Yes ☑ No  |                    |   |  |
| Is $V_3$ or $V_{av34} > 1.5$   | * V <sub>12</sub> /2             | s 🗆 No                   |                        |   | Is V <sub>3</sub> or V <sub>av3</sub>                | <sub>34</sub> > 1.5                     | * V <sub>12</sub> /2   | Yes ☑ No  |                    |   |  |
| If Yes,V <sub>12a</sub> =  | pc/h                             | (Equation 25             | -8)                    |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)      |   |                        |   |                    |   |  |
| Capacity Che   | cks                              |                          |                        |   | Capacit  | y Che                                   | ecks                   |   |                    |   |  |
|  | Actual                           | Ca                       | pacity                 | LOS F?  |  | Actua                                   |                        | Ca  | oacity             | LOS F   |  |
|  |                                  |                          |                        |   | V <sub>F</sub>                                       |   | 5928                   | Exhibit 25-1                                      | 4 6780             | No  |  |
| V <sub>FO</sub>  |                                  | Exhibit 25-7             |                        |   | $V_{FO} = V_{F}$                                     | - V <sub>R</sub>                        | 4808                   | Exhibit 25-1                                      | 4 6780             | No  |  |
|  |                                  |                          |                        |   | V <sub>R</sub>                                       |   | 1120                   | Exhibit 25-3                                      | 2100               | No  |  |
| Flow Entering  |                                  | ı                        |                        |   | Flow En  |   |                        | rge Influen                                       |                    |   |  |
|  | Actual                           | î r                      | Desirable              | Violation?  | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \                | _                                       | ctual                  | Max Desirab                                       |                    | Violation                                     |  |
| V <sub>R12</sub>   | loo Data:                        | Exhibit 25-7             | f mat []               |   | V <sub>12</sub>                                      |   | 814 <b>D</b>           | Exhibit 25-14                                     | 4400:All           | No  |  |
| Level of Serv  |                                  | •                        |                        |   |  |   |                        | terminatio  | •                  | <u>-)                                    </u> |  |
| $D_R = 5.475 + 0.$   |                                  | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub> |   |  |   |                        | .0086 V <sub>12</sub> - 0.                        | 009 L <sub>D</sub> |   |  |
| $D_R = (pc/mi/s)$  |                                  |                          |                        |   |  | 2.8 (pc/                                | ,                      |   |                    |   |  |
| ,  |                                  |                          |                        |   |  | •                                       | it 25-4)               | n e   |                    |   |  |
| Speed Deterr   |                                  |                          |                        |   | Speed E  |   |                        |   |                    |   |  |
| •  | 5-19)                            |                          |                        |   | -  |   | chibit 25-<br>(Exhibit |   |                    |   |  |
| M <sub>S</sub> = (Exibit 2   |                                  |                          |                        |   |  |   |                        |   |                    |   |  |
| $M_S = $ (Exibit 2: $S_R = $ mph (Exh                                  | ibit 25-19)                      |                          |                        |   |  | -                                       |                        |   |                    |   |  |
| $M_S = $ (Exibit 2:<br>$S_R = $ mph (Exh<br>$S_0 = $ mph (Exh          |                                  |                          |                        |   | $S_0 = 57$   | 7.1 mph                                 | (Exhibit<br>(Exhibit   | 25-19)  |                    |   |  |

|   | <u>R</u> AI                             | MPS AND                                 | RAMP JUNG                | <u>2110N2 W</u>                                     | OKNORE  | <u> </u>   |                          |                                     |                                       |
|---|---|---|--------------------------|---|---|--|--------------------------|-------------------------------------|---------------------------------------|
| General Info  | rmation                                 |   |                          | Site Infor  | mation  |  |                          |                                     |                                       |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 9/08/                                   | 2011                                    | Ju<br>Ju                 | eeway/Dir of Tranction<br>risdiction<br>alysis Year | E<br>N  | Southbound I-<br>Exit 4 SB On-I<br>NYSDOT<br>2016 No-Build | Ramp                     |                                     |                                       |
| Project Description   |   |   |                          | . <b>,</b>  |   |  |                          |                                     |                                       |
| Inputs  |   |   |                          |   |   |  |                          |                                     |                                       |
| Jpstream Adj Ramp   |   | Terrain: Level                          |                          |   |   |  |                          | Downstr<br>Ramp                     | eam Adj                               |
| Yes O   |   |   |                          |   |   |  |                          | ☐ Yes                               | □ On                                  |
| □ No □ O  |   |   |                          |   |   |  |                          | M No                                | ☐ Off                                 |
| - <sub>up</sub> = 2035  |   | S <sub>FF</sub> = 56.0 mph              |                          |   |   | 0.0 mph  |                          | L <sub>down</sub> =                 | ft                                    |
| $J_{\rm u} = 370 \text{ v}$   |   |   |                          | show lanes, L <sub>A</sub> ,                        | $L_{D'}V_{R'}V_{f}$   |  |                          | V <sub>D</sub> =                    | veh/h                                 |
| Conversion t  | to pc/h Und                             | der Base C                              | Conditions               |   |   |  |                          |                                     |                                       |
| (pc/h)  | V<br>(Veh/hr)                           | PHF                                     | Terrain                  | %Truck  | %Rv   | f <sub>HV</sub>  | f <sub>p</sub>           | v = V/PH                            | IF x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 4650                                    | 0.92                                    | Level                    | 2   | 0   | 0.990  | 1.00                     |                                     | 5105                                  |
| Ramp  | 530                                     | 0.93                                    | Level                    | 5   | 0   | 0.976  | 1.00                     |                                     | 584                                   |
| UpStream  | 370                                     | 0.93                                    | Level                    | 3   | 0   | 0.985  | 1.00                     |                                     | 404                                   |
| DownStream  |   | Merge Areas                             |                          | <u> </u>  | 1   | ļ  | Diverge A                | \roas                               |                                       |
| Estimation o  |   | ivier ge Areas                          |                          |   | Estimati  | on of v <sub>12</sub>                                      |                          | 11603                               |                                       |
|   |   | /D )                                    |                          |   |   |  |                          |                                     |                                       |
|   | $V_{12} = V_F$                          | • | 05.0\                    |   |   | V <sub>12</sub>  | $_{2} = V_{R} + (V_{R})$ | F - V <sub>R</sub> )P <sub>FD</sub> |                                       |
| ·EQ =   |   | ation 25-2 or                           |                          |   | L <sub>EQ</sub> =   |  | (Equation                | on 25-8 or 25                       | -9)                                   |
| P <sub>FM</sub> =   |   |   | on (Exhibit 25-5)        |   | P <sub>FD</sub> =   |  | using E                  | quation (Exhib                      | it 25-12)                             |
| 12 =  | 3077                                    |   | V <sub>12</sub> = pc/h   |   |   |  |                          |                                     |                                       |
| $V_3$ or $V_{av34}$   | 2028 <sub>[</sub><br>5)                 | pc/h (Equatio                           | n 25-4 or 25-            |   | $V_3$ or $V_{av34}$   |  | pc/h (Equ                | uation 25-15 or 2                   | 25-16)                                |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                          | ,                                       | s 🗹 No                                  |                          |   | Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |  |                          |                                     |                                       |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                          |   |   |                          |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                  |  |                          |                                     |                                       |
| Yes,V <sub>12a</sub> =  |   | (Equation 25                            | -8)                      |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)                 |  |                          |                                     |                                       |
| Capacity Che  |   | (- 100                                  | -,                       |   | Capacity  | / Checks   |                          |                                     |                                       |
| capacity circ   | Actual                                  | Ca                                      | pacity                   | LOS F?  | Cupacity  | Actu   | 1                        | Capacity                            | LOS F?                                |
|   |   | Ì                                       |                          |   | V <sub>F</sub>  |  |                          | bit 25-14                           |                                       |
| $V_{FO}$  | 5689                                    | Exhibit 25-7                            |                          | No  | $V_{FO} = V_F$  | - V_   | _                        | bit 25-14                           |                                       |
| *FO   | 3007                                    | EXHIBIT 25-7                            |                          | 110   |   | *R   |                          | bit 25-14<br>bit 25-3               |                                       |
| Tlave Fratarin  | a Maras Is                              | fluores A                               |                          | <u></u>   | V <sub>R</sub>  | tarina Di  |                          |                                     |                                       |
| Flow Enterin  | Actual                                  |   | r <b>ea</b><br>Desirable | Violation?  | FIOW En   | Actual   |                          | fluence Are<br>x Desirable          | Violation?                            |
| V   | 3661                                    | Exhibit 25-7                            | 4600:All                 | No No   | V <sub>12</sub>   | Actual   | Exhibit 2                |                                     | violation?                            |
| V <sub>R12</sub><br>Level of Serv                                     |   |   |                          | INO   |   | Sorvice  |                          | nation (if n                        | ot <b>F</b> )                         |
|   | + 0.00734 v <sub>R</sub> + 0            |   |                          |   |   |  |                          | 1 <u>12 -</u> 0.009 L <sub>D</sub>  | or r)                                 |
|   | • | 7.0070 v <sub>12</sub> - 0.0            | OOZ/ LA                  |   |   |  | T U.UUOD V               | 12 - 0.009 L <sub>D</sub>           |                                       |
| D <sub>R</sub> = 28.1 (pc/mi/ln)<br>LOS = D (Exhibit 25-4)            |   |   |                          | $D_{R} = (pc/mi/ln)$                                |   |  |                          |                                     |                                       |
|   | -                                       |   |                          |   |   | xhibit 25-4)   |                          |                                     |                                       |
| Speed Deter   |   |   |                          |   | <del></del>   | etermina   | ιτιοπ                    |                                     |                                       |
|   | ibit 25-19)                             |   |                          |   | 3   | xhibit 25-19)  | 10)                      |                                     |                                       |
| $S_R$ = 50.4 mph (Exhibit 25-19)                                      |   |   |                          |   | $S_R = mp$  | oh (Exhibit 25-  | 19)                      |                                     |                                       |
| C   |   |   |                          |   |   |  |                          |                                     |                                       |
| $S_0 = 50.5 \text{ mph}$  | (Exhibit 25-19)<br>(Exhibit 25-14)      |   |                          |   | ] ° .   | oh (Exhibit 25-<br>oh (Exhibit 25-                         | •                        |                                     |                                       |

|  | RAI                     | MPS AND        | RAMP JUNG                             | TIONS W   | <u>/ORKSHE</u>                        | <u>:E I</u>          |                        |                       |                     |                                    |
|--|-------------------------|----------------|---------------------------------------|---|---------------------------------------|----------------------|------------------------|-----------------------|---------------------|------------------------------------|
| General Info   | rmation                 |                |                                       | Site Infor  | mation                                |                      |                        |                       |                     |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio  | 9/08/                   |                | Jui<br>Jui                            | eeway/Dir of Tr<br>nction<br>isdiction<br>alysis Year           |                                       |                      |                        | mp                    |                     |                                    |
| Project Description  |                         |                | 7.1.                                  | arysis rour   |                                       | 201011               | Dana                   |                       |                     |                                    |
| nputs  |                         |                |                                       |   |                                       |                      |                        |                       |                     |                                    |
| Jpstream Adj Ramp  |                         | Terrain: Level |                                       |   |                                       |                      |                        |                       | Downstre<br>Ramp    | am Adj                             |
| Yes O  | า                       |                |                                       |   |                                       |                      |                        |                       | ✓ Yes               | ✓ On                               |
| No O   | ff                      |                |                                       |   |                                       |                      |                        |                       | □ No                | ☐ Off                              |
| <sub>-up</sub> = ft  |                         |                |                                       |   |                                       |                      |                        |                       | L <sub>down</sub> = | 2035 ft                            |
| / <sub>u</sub> = veh/ł   | 1                       | S              | $_{FF} = 56.0 \text{ mph}$ Sketch ( s | show lanes, L <sub>A</sub> ,                                    | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$      | 0.0 mpl              | 1                      |                       | V <sub>D</sub> =    | 530 veh/h                          |
| Conversion t   | o pc/h Und              | der Base C     | Conditions                            |   |                                       |                      |                        |                       |                     |                                    |
| (pc/h)   | V<br>(Veh/hr)           | PHF            | Terrain                               | %Truck  | %Rv                                   | f                    | HV                     | f <sub>p</sub>        | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 4400                    | 0.92           | Level                                 | 2   | 0                                     | 0.9                  | 90                     | 1.00                  | ,                   | 1830                               |
| Ramp   | 370                     | 0.93           | Level                                 | 3   | 0                                     | 0.9                  | 85                     | 1.00                  |                     | 404                                |
| UpStream   |                         |                |                                       |   |                                       | ₩                    |                        |                       |                     |                                    |
| DownStream   | 530                     | 0.93           | Level                                 | 5   | 0                                     | 0.9                  |                        | 1.00                  |                     | 584                                |
| Estimation o   |                         | Merge Areas    |                                       |   | Estimati                              | ion o                |                        | Diverge Areas         | <u> </u>            |                                    |
|  |                         | /D )           |                                       |   | Lotimati                              | -                    | 12                     |                       |                     |                                    |
|  | $V_{12} = V_F$          |                | 05.0)                                 |   |                                       |                      | V <sub>12</sub> =      | $V_R + (V_F - V_F)$   | $/_{R})P_{FD}$      |                                    |
| ·EQ =  |                         | ation 25-2 or  |                                       |   | L <sub>EQ</sub> =                     |                      |                        | (Equation 2           | 5-8 or 25-9         | 9)                                 |
| P <sub>FM</sub> =  |                         |                | on (Exhibit 25-5)                     |   | P <sub>FD</sub> =                     |                      |                        | using Equa            | tion (Exhibit       | 25-12)                             |
| / <sub>12</sub> =  | 2911                    |                |                                       |   | V <sub>12</sub> =                     |                      |                        | pc/h                  |                     |                                    |
| <sub>3</sub> or V <sub>av34</sub>  | 1919 <sub> </sub><br>5) | pc/h (Equatio  | n 25-4 or 25-                         |   | $V_3$ or $V_{av34}$                   |                      |                        | pc/h (Equation        | n 25-15 or 25       | -16)                               |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,70   | ,                       | s 🔽 No         |                                       |   | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>34</sub> > 2,70 | 00 pc/h?               | ☐ Yes ☐ N             | lo                  |                                    |
| $^{3} \text{ s V}_{3} \text{ or V}_{av34} > 1.5$   |                         |                |                                       |   | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>34</sub> > 1.5  | * V <sub>12</sub> /2   | □ Yes □ N             | lo                  |                                    |
| Yes,V <sub>12a</sub> =   | · <del>-</del>          | (Equation 25   | -8)                                   |   | If Yes,V <sub>12a</sub> =             |                      |                        | pc/h (Equat           | ion 25-18)          |                                    |
| Capacity Che   | <u>.</u>                | (= qualion = 0 |                                       |   | Capacit                               | v Che                | ecks                   |                       |                     |                                    |
| capacity circ  | Actual                  | Ca             | npacity                               | LOS F?  |                                       | <i> </i>             | Actual                 |                       | Capacity            | LOS F                              |
|  |                         |                | , ,                                   |   | V <sub>F</sub>                        |                      |                        | Exhibit 25            |                     |                                    |
| $V_{FO}$   | 5234                    | Exhibit 25-7   |                                       | No  | $V_{FO} = V_{F}$                      | - V <sub>D</sub>     |                        | Exhibit 25            |                     | 1                                  |
| - FO   | 0201                    | EXHIBIT 20 7   |                                       |   | V <sub>R</sub>                        | ·R                   |                        | Exhibit 2             |                     | +                                  |
| Jou Entorin  | a Maraa In              | fluonos        |                                       |   | -                                     | torin                | a Dive                 |                       |                     |                                    |
| Flow Enterin   | Actual                  |                | Desirable                             | Violation?  | FIOW EII                              | _                    | g <i>Dive</i><br>ctual | erge Influe<br>Max De |                     | Violation?                         |
| V <sub>R12</sub>   | 3315                    | Exhibit 25-7   | 4600:All                              | No  | V <sub>12</sub>                       |                      | , aui                  | Exhibit 25-14         | Sil dibito          | v ioiation:                        |
| Level of Serv  | 1                       |                |                                       | 140   |                                       | Son                  | rice D                 | eterminat             | ion (if pe          | t <b>F</b> 1                       |
|  |                         |                |                                       |   |                                       |                      |                        |                       | <u> </u>            | ,                                  |
| $D_R = 5.475 + 0.00734 \text{ v}_R + 0.0078 \text{ V}_{12} - 0.00627 \text{ L}_A$<br>$D_R = 25.5 \text{ (pc/mi/ln)}$ |                         |                |                                       | $D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$<br>$D_R = (pc/mi/ln)$ |                                       |                      |                        |                       |                     |                                    |
| D <sub>R</sub> = 25.5 (pc/mi/ln)<br>LOS = C (Exhibit 25-4)   |                         |                |                                       |   | xhibit                                | •                    |                        |                       |                     |                                    |
| Speed Deteri   |                         |                |                                       |   | Speed L                               |                      |                        | <u> </u>              |                     |                                    |
|  |                         |                |                                       |   | <del></del>                           | xhibit 2!            |                        | OH .                  |                     |                                    |
| $M_{\rm S} = 0.356  ({\rm Ex})$  |                         |                |                                       |   | 3                                     |                      | -                      | ١                     |                     |                                    |
|  | (Exhibit 25-19)         |                |                                       |   | L''                                   |                      | ibit 25-19             |                       |                     |                                    |
| $S_0 = 50.9 \text{ mph (Exhibit 25-19)}$ $S_0 = \text{mph (Exhibit 25-19)}$  |                         |                |                                       |   |                                       |                      |                        |                       |                     |                                    |
|  | (Exhibit 25-14)         |                |                                       |   | I *                                   |                      | ibit 25-15             |                       |                     |                                    |

|   |   |                            | FREEWA                | Y WEAV   | ING WOR  | KSHEE          | Τ   |                |              |
|---|---|----------------------------|-----------------------|--|--|----------------|---|----------------|--------------|
| Genera  | Informat  | ion                        |                       |  | Site Info                                      | rmation        |   |                |              |
| Analyst SEB Agency/Company CHA Date Performed 9/08/2011 Analysis Time Period AM |   |                            |                       | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location                                       | Exit 2<br>NYSD | lorthbound<br>E on to 2W o<br>OOT<br>No-Build | îf             |              |
| Inputs  |   |                            |                       |  | 1  |                |   |                |              |
| Weaving nu<br>Weaving se<br>Terrain   | e-flow speed, and mber of lanes, g length, L (ft) | N                          | 56<br>4<br>815<br>Lev | el   | Weaving type<br>Volume ratio,<br>Weaving ratio | , VR           |   |                | 29<br>30     |
| Conver  | sions to p  | c/h Unde                   | er Base C             | ondition   |  |                |   | •              |              |
| (pc/h)  | V   | PHF                        | Truck %               | RV %   | E <sub>T</sub>                                 | E <sub>R</sub> | f <sub>HV</sub>                               | fp             | V            |
| $V_{o1}$  | 2360  | 0.92                       | 2                     | 0  | 1.5  | 1.2            | 0.990   | 1.00           | 2590         |
| $V_{02}$  | 0   | 0.92                       | 2                     | 0  | 1.5  | 1.2            | 0.990   | 1.00           | 0            |
| $V_{w1}$  | 670   | 0.92                       | 2                     | 0  | 1.5  | 1.2            | 0.990   | 1.00           | 735          |
| $V_{w2}$  | 290   | 0.92                       | 2                     | 0  | 1.5  | 1.2            | 0.990   | 1.00           | 318          |
| V <sub>w</sub>  |   |                            | •                     | 1053   | V <sub>nw</sub>                                |                | •   | •              | 2590         |
| V   |   |                            |                       |  |  | l              |   |                | 3643         |
| Weavin  | g and No  | n-Weavin                   | g Speeds              | 5  |  |                |   |                | '            |
|   |   |                            | Unconstr              | 4  |  |                |   | trained        |              |
| a (Eyhihit 1  | 1 ()  | Weaving                    | (i = w)               | Non-Wea  | ving (i = nw)                                  |                | ng (i = w)                                    | 1              | ving ( = nw) |
| a (Exhibit 2)<br>b (Exhibit 2)  |   |                            |                       |  |  | 0.             | 35<br>20                                      | <del>\</del>   | .00          |
| c (Exhibit 2  |   |                            |                       |  |  |                | 97  | <del>}</del>   | .30          |
| d (Exhibit 2  | 1-6)  |                            |                       |  |  | 0.             | 80  | 0.             | .75          |
| Weaving intens  | •   |                            |                       |  |  | 2.             | 13  | 0.             | .25          |
| Weaving and no<br>speeds, Si (mi/l  |   |                            |                       |  |  | 29             | .70   | 51             | .66          |
| Maximum n   | anes required<br>umber of lanes<br>If Nw < Nw     | s, Nw (max)                | ·                     |  | 1.40<br>1.40                                   | if Nw > Nv     | v (max) constr                                | rained operati | ion          |
|   |   |                            |                       |  | f Service,                                     | and Cap        | acity   |                |              |
| Weaving se  | gment speed,                                      | S (mi/h)                   |                       | 42.56  |  |                |   |                |              |
|   | gment density,                                    | , D (pc/mi/ln)             |                       | 21.40  |  |                |   |                |              |
| Level of ser  |   |                            |                       | С  |  |                |   |                |              |
| Capacity of   | base condition                                    | n, c <sub>b</sub> (pc/h)   |                       | 6249   |  |                |   |                |              |
| Capacity as   | a 15-minute fl                                    | ow rate, c (vel            | n/h)                  | 6187   |  |                |   |                |              |
| Capacity as   | a full-hour vol                                   | ume, c <sub>h</sub> (veh/l | 1)                    | 5692   |  |                |   |                |              |
| Notes   |   |                            |                       |  |  |                |   |                |              |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|   |  |                            | FREEWA                | Y WEAV                      | ING WOF  | RKSHEE         | Γ              |               |              |
|---|--|----------------------------|-----------------------|-----------------------------|--|----------------|----------------|---------------|--------------|
| General   | Informat   | ion                        |                       |                             | Site Info  | rmation        |                |               |              |
| Analyst SEB Agency/Company CGA Date Performed 9/08/2011 Analysis Time Period AM |  |                            |                       | Weaving Seg<br>Jurisdiction | Freeway/Dir of Travel Weaving Seg Location Jurisdiction Analysis Year  I-87 Southbound Exit 2W on to 2E NYSDOT 2016 No-Build |                | W on to 2E o   | ff            |              |
| Inputs  |  |                            |                       |                             |  |                |                |               |              |
| Weaving nur   | e-flow speed, and the speed of lanes, greatly length, L (ft) | 11                         | 56<br>4<br>810<br>Lev |                             | Weaving type<br>Volume ratio<br>Weaving rati   | , VR           |                |               | 22<br>35     |
| Convers   | sions to p   | c/h Unde                   | r Base C              | ondition                    | าร   |                |                |               | _            |
| (pc/h)  | V  | PHF                        | Truck %               | RV %                        | E <sub>T</sub>   | E <sub>R</sub> | $f_{HV}$       | fp            | V            |
| $V_{o1}$  | 3700   | 0.92                       | 2                     | 0                           | 1.5  | 1.2            | 0.990          | 1.00          | 4061         |
| $V_{o2}$  | 0  | 0.92                       | 2                     | 0                           | 1.5  | 1.2            | 0.990          | 1.00          | 0            |
| V <sub>w1</sub>   | 700  | 0.92                       | 2                     | 0                           | 1.5  | 1.2            | 0.990          | 1.00          | 768          |
| $V_{w2}$  | 370  | 0.92                       | 2                     | 0                           | 1.5  | 1.2            | 0.990          | 1.00          | 406          |
| V <sub>w</sub>  | 1  | •                          |                       | 1174                        | $V_{nw}$   |                |                | ļ             | 4061         |
| V   | 1  |                            |                       |                             |  | J              |                |               | 5235         |
| Weaving   | g and No   | n-Weavin                   | g Speeds              | <br>S                       |  |                |                |               |              |
|   |  |                            | Unconstr              |                             |  |                |                | trained       |              |
| - /F. I. II. II. O. 4   | ()   | Weaving                    |                       |                             | ving (i = nw)  | Weavir         | ng (i = w)     | Non-Wea       | ving ( = nw) |
| a (Exhibit 24<br>b (Exhibit 24  |  | 0.15<br>2.20               |                       |                             | .00  |                |                |               |              |
| c (Exhibit 24   |  | 0.9                        |                       | !                           | .30  |                |                |               |              |
| d (Exhibit 24   |  | 0.80                       |                       |                             | .75  |                |                |               |              |
| Weaving intensit  |  | 1.16                       |                       | <u> </u>                    | .58  | <b>†</b>       |                |               |              |
| Weaving and no<br>speeds, Si (mi/h)   | n-weaving  | 36.2                       |                       |                             | 1.05   |                |                |               |              |
| Number of la  | anes required  | for unconstrai             | ned operation,        | Nw                          | 1.25   |                |                | Į.            |              |
| 1   | umber of lanes   |                            |                       |                             | 1.40   | = :c.          |                |               | i            |
|   |  | (max) uncons               |                       |                             |  |                | v (max) consti | rained operat | ion          |
| Weaving sec   | ment sneed   | S (mi/h)                   | Density,              | 42.02                       | f Service,   | anu Cap        | acity          |               |              |
|   | gment speed,<br>gment density,                               |                            |                       | 31.14                       |  |                |                |               |              |
| Level of serv   |  | - (po///////)              |                       | D                           |  |                |                |               |              |
|   | pase condition   | , c <sub>h</sub> (pc/h)    |                       | 6601                        |  |                |                |               |              |
|   |  | ow rate, c (vel            | n/h)                  | 6536                        |  |                |                |               |              |
|   |  | ume, c <sub>h</sub> (veh/h |                       | 6013                        |  |                |                |               |              |
| Notes   |  | - 11                       |                       |                             |  |                |                |               |              |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

# **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (milh) Frœ-Flow Spred FFS = 75 minh 70 minh 70 65 midt 60 miih 60 55 mith 50 30 400 200 1200 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | Input                    | Output               |
|----------------------------|--------------------------|----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D            |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D              |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D             |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D            |
| Planning (M)               | FFS, LOS, AADT           | N, S, D              |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>or</sub> S, D |

| General Information                           |                                   |          | Site Information  |           |   |
|---|-----------------------------------|----------|---|-----------|---|
| Analyst                                       | SEB                               |          | Highway/Direction of Travel   | Northbo   | und I-87  |
| Agency or Company                             | CHA                               |          | From/To   | Exit 2 to | Exit 4  |
| Date Performed                                | 6/22/2011                         |          | Jurisdiction  | NYSDO     | Τ   |
| Analysis Time Period                          | AM                                |          | Analysis Year   | 2026 No   | -Build  |
| Project Description Exit 4                    |                                   |          |   |           |   |
| ✓ Oper.(LOS)                                  |                                   |          | Des.(N)   | □ Pla     | nning Data  |
| Flow Inputs                                   |                                   |          |   |           |   |
| Volume, V                                     | 3000                              | veh/h    | Peak-Hour Factor, PHF   | 0.92      |   |
| AADT  |                                   | veh/day  | %Trucks and Buses, P <sub>T</sub>   | 2         |   |
| Peak-Hr Prop. of AADT, K                      |                                   |          | %RVs, P <sub>R</sub>  | 0         |   |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D |                                   | a la /la | General Terrain:  | Level     |   |
| Driver type adjustment                        | 1.00                              | veh/h    | Grade % Length<br>Up/Down %   | mi        |   |
| Calculate Flow Adjustn                        |                                   |          | Op/Down 78  |           |   |
| f <sub>p</sub>                                | 1.00                              |          | E <sub>R</sub>  | 1.2       |   |
|   |                                   |          |   |           |   |
| E <sub>T</sub>                                | 1.5                               |          | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$                              | 0.990     |   |
| Speed Inputs                                  |                                   |          | Calc Speed Adj and FF   | <u> </u>  |   |
| Lane Width                                    | 12.0                              | ft       | $f_{LW}$  |           | mi/h  |
| Rt-Shoulder Lat. Clearance                    | 6.0                               | ft       | f <sub>LC</sub>   |           | mi/h  |
| nterchange Density                            | 0.50                              | I/mi     |   |           |   |
| Number of Lanes, N                            | 3                                 |          | f <sub>ID</sub>   |           | mi/h  |
| FFS (measured)                                | 56.0                              | mi/h     | f <sub>N</sub>  |           | mi/h  |
| Base free-flow Speed, BFFS                    |                                   | mi/h     | FFS   | 56.0      | mi/h  |
| OS and Performance                            | Measures                          |          | Design (N)  |           |   |
| O   |                                   |          | Design (N)  |           |   |
| Operational (LOS)                             |                                   |          | Design LOS  |           |   |
| $v_p = (V \text{ or DDHV}) / (PHF \times N)$  | x t <sub>HV</sub> x<br>1098       | pc/h/ln  | $v_p = (V \text{ or DDHV}) / (PHF \times N \times N)$                     | cfx       |   |
| (p)   |                                   | <b>P</b> | f)  | HV        | pc/h  |
| 6   | 56.0                              | mi/h     | 'p'   |           | mi/h  |
| $D = v_p / S$                                 | 19.6                              | pc/mi/ln | D = v / S   |           | mi/h  |
| LOS   | С                                 |          | D = v <sub>p</sub> / S  |           | pc/mi/ln  |
| 01  |                                   |          | Required Number of Lanes, N   |           |   |
| Glossary                                      |                                   |          | Factor Location   |           |   |
| N - Number of lanes                           | S - Speed                         |          | E <sub>R</sub> - Exhibits23-8, 23-10                                      |           | f <sub>LW</sub> - Exhibit 23-4                                  |
| √ - Hourly volume                             | D - Density                       |          | $E_{T}$ - Exhibits 23-8, 23-10, 23-1                                      | 11        | f <sub>LC</sub> - Exhibit 23-5                                  |
|   |                                   |          |   | 1 1       | ILC - EXHIDIT 40-0  |
| v <sub>p</sub> - Flow rate                    | FFS - Free-flow                   | / speed  | i '   |           |   |
| •   | FFS - Free-flow<br>BFFS - Base fr |          | f <sub>p</sub> - Page 23-12<br>LOS, S, FFS, v <sub>p</sub> - Exhibits 23- |           | f <sub>N</sub> - Exhibit 23-6<br>f <sub>ID</sub> - Exhibit 23-7 |

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# **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passanger-Car Speed (mith) Froe-Flow Speed FFS = 75 minh 70 miih 65 miih 60 miih 60 55 mith 30 200 1200 400 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>p</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>o</sub> . S. D |

| General Information                       |                             |            | Site Information                             |                  |                                |
|---|-----------------------------|------------|--|------------------|--------------------------------|
| Analyst                                   | SEB                         |            | Highway/Direction of Travel                  | Southbou         | und I-87                       |
| Agency or Company                         | CHA                         |            | From/To                                      | Exit 4 to        | Exit 2                         |
| Date Performed                            | 6/22/2011                   |            | Jurisdiction                                 | NYSD07           | -                              |
| Analysis Time Period                      | AM                          |            | Analysis Year                                | 2026 <b>N</b> o- | -Build                         |
| Project Description Exit 4                |                             |            |  |                  |                                |
| ☑ Oper.(LOS)                              |                             |            | Des.(N)                                      | Plar             | nning Data                     |
| Flow Inputs                               |                             |            |  |                  |                                |
| Volume, V                                 | 5250                        | veh/h      | Peak-Hour Factor, PHF                        | 0.92             |                                |
| AADT                                      |                             | veh/day    | %Trucks and Buses, $P_{T}$                   | 2                |                                |
| Peak-Hr Prop. of AADT, K                  |                             |            | %RVs, P <sub>R</sub>                         | 0                |                                |
| Peak-Hr Direction Prop, D                 |                             |            | General Terrain:                             | Level            |                                |
| DDHV = AADT x K x D                       |                             | veh/h      | Grade % Length                               | mi               |                                |
| Driver type adjustment                    | 1.00                        |            | Up/Down %                                    |                  |                                |
| Calculate Flow Adjustr                    |                             |            |  | -                |                                |
| f <sub>p</sub>                            | 1.00                        |            | E <sub>R</sub>                               | 1.2              |                                |
| E <sub>T</sub>                            | 1.5                         |            | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990            |                                |
| Speed Inputs                              |                             |            | Calc Speed Adj and FF                        | S                |                                |
| _ane Width                                | 12.0                        | ft         | f <sub>LW</sub>                              |                  | mi/h                           |
| Rt-Shoulder Lat. Clearance                | 6.0                         | ft         |  |                  |                                |
| Interchange Density                       | 0.50                        | I/mi       | f <sub>LC</sub>                              |                  | mi/h                           |
| Number of Lanes, N                        | 3                           |            | f <sub>ID</sub>                              |                  | mi/h                           |
| FFS (measured)                            | 56.0                        | mi/h       | f <sub>N</sub>                               |                  | mi/h                           |
| Base free-flow Speed, BFFS                |                             | mi/h       | FFS  | 56.0             | mi/h                           |
| LOS and Performance                       | Measures                    |            | Design (N)                                   |                  |                                |
|   |                             |            | Design (N)                                   |                  |                                |
| Operational (LOS)                         |                             |            | Design LOS                                   |                  |                                |
| $V_p = (V \text{ or DDHV}) / (PHF x N x)$ | x f <sub>HV</sub> x<br>1921 | no/h/ln    |  | v f v            |                                |
| ;<br>p)                                   | 1921                        | pc/h/ln    | $v_p = (V \text{ or DDHV}) / (PHF \times N)$ | K IHV X          | pc/h                           |
| 3   | 55.6                        | mi/h       | f <sub>p</sub> )                             |                  |                                |
| $D = v_p / S$                             | 34.6                        | pc/mi/ln   | S  |                  | mi/h                           |
| _OS                                       | D                           | p 0,,,,,,, | $D = v_p / S$                                |                  | pc/mi/ln                       |
| _03                                       | Б                           |            | Required Number of Lanes, N                  | 1                |                                |
| Glossary                                  |                             |            | Factor Location                              |                  |                                |
| N - Number of lanes                       | S - Speed                   |            | E Evhibita 22 0 22 40                        |                  | f                              |
| √ - Hourly volume                         | D - Density                 |            | E <sub>R</sub> - Exhibits23-8, 23-10         |                  | f <sub>LW</sub> - Exhibit 23-4 |
| v <sub>p</sub> - Flow rate                | FFS - Free-flov             | v speed    | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-   | 11               | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                     | BFFS - Base fr              |            | f <sub>p</sub> - Page 23-12                  |                  | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho              |                             | opood      | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | -2, 23-3         | f <sub>ID</sub> - Exhibit 23-7 |
| PITTY DIFFCHOIM GOSIGN NO                 | ar voidillo                 |            |  |                  |                                |

# **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (milth) Free-Flow Speed FFS = 75 mith 70 midt 70 65 mish 60 miih 60 55 min 400 200 1200 1600 2000 2400 Flow Rate (pc/h/lin) Site Information General Information

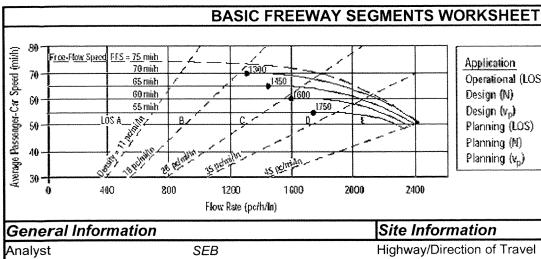
| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, V <sub>D</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | V <sub>D</sub> , S, D |

| General Information                     |                            |                | Site Information                             |          |                                |
|---|----------------------------|----------------|--|----------|--------------------------------|
| Analyst                                 | SEB                        |                | Highway/Direction of Travel                  | Northbo  | ound I-87                      |
| Agency or Company                       | CHA                        |                | From/To                                      | Exit 4 o | ff to Exit 4 on                |
| Date Performed                          | 9/09/2011                  |                | Jurisdiction                                 | NYSDC    | )T                             |
| Analysis Time Period                    | AM                         |                | Analysis Year                                | 2026 No  | o-Build                        |
| Project Description Exit 4              |                            |                |  |          |                                |
| Oper.(LOS)                              |                            | goognam's .    | Des.(N)                                      | □ Pla    | anning Data                    |
| Flow Inputs                             |                            |                |  |          |                                |
| Volume, V                               | 2250                       | veh/h          | Peak-Hour Factor, PHF                        | 0.92     |                                |
| AADT                                    |                            | veh/day        | %Trucks and Buses, $P_{T}$                   | 2        |                                |
| Peak-Hr Prop. of AADT, K                |                            |                | %RVs, P <sub>R</sub>                         | 0        |                                |
| Peak-Hr Direction Prop, D               |                            |                | General Terrain:                             | Level    |                                |
| DDHV = AADT x K x D                     |                            | veh/h          | Grade % Length                               | mi       |                                |
| Driver type adjustment                  | 1.00                       |                | Up/Down %                                    |          |                                |
| Calculate Flow Adjustr                  |                            |                |  |          |                                |
| f <sub>p</sub>                          | 1.00                       |                | E <sub>R</sub>                               | 1.2      |                                |
| E <sub>T</sub>                          | 1.5                        |                | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990    |                                |
| Speed Inputs                            |                            |                | Calc Speed Adj and FF                        | S        |                                |
| _ane Width                              | 12.0                       | ft             | f <sub>LW</sub>                              |          | mi/h                           |
| Rt-Shoulder Lat. Clearance              | 6.0                        | ft             |  |          |                                |
| Interchange Density                     | 0.50                       | I/mi           | f <sub>LC</sub>                              |          | mi/h                           |
| Number of Lanes, N                      | 3                          |                | $f_{ID}$                                     |          | mi/h                           |
| FFS (measured)                          | 56.0                       | mi/h           | f <sub>N</sub>                               |          | mi/h                           |
| Base free-flow Speed, BFFS              |                            | mi/h           | FFS  | 56.0     | mi/h                           |
| LOS and Performance                     | Measures                   |                | Design (N)                                   |          |                                |
|   |                            |                | Design (N)                                   |          |                                |
| Operational (LOS)                       | _                          |                | Design LOS                                   |          |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$ | x f <sub>HV</sub> x<br>823 | pc/h/ln        | $v_n = (V \text{ or DDHV}) / (PHF \times N)$ | c f x    |                                |
| · <sub>p</sub> )                        | 020                        | po//////       | -5   | HV       | pc/h                           |
| 3                                       | 56.0                       | mi/h           | f <sub>p</sub> )                             |          | ! R.                           |
| $D = v_p / S$                           | 14.7                       | pc/mi/ln       | 5  |          | mi/h                           |
| _os <sup>°</sup>                        | В                          |                | $D = v_p / S$                                |          | pc/mi/ln                       |
|   |                            |                | Required Number of Lanes, N                  | <u> </u> |                                |
| Glossary                                |                            |                | Factor Location                              |          |                                |
| N - Number of lanes                     | S - Speed                  |                | E <sub>R</sub> - Exhibits23-8, 23-10         |          | f <sub>LW</sub> - Exhibit 23-4 |
| V - Hourly volume                       | D - Density                |                | i '`   | 11       |                                |
| v <sub>p</sub> - Flow rate              | FFS - Free-flow            | w speed        | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-   | 1 }      | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                   | BFFS - Base fr             | ree-flow speed | f <sub>p</sub> - Page 23-12                  | 0.000    | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho            | our volume                 |                | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | -2, 23-3 | f <sub>ID</sub> - Exhibit 23-7 |
|   |                            |                |  |          |                                |

# **BASIC FREEWAY SEGMENTS WORKSHEET** Free-Flow Speed FFS = 75 min 70 min Average Passenger-Car Speed (mith) 70 65 midt 60 midh 60 55 mith 50 30 400 200 1200 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> , S, D |

| General Information                            |                          |          | Site Information                               |          |                                |
|--|--------------------------|----------|--|----------|--------------------------------|
| Analyst  | SEB                      |          | Highway/Direction of Travel                    | Southbo  | ound I-87                      |
| Agency or Company                              | CHA                      |          | From/To  | Exit 5 o | n to Exit 4 on                 |
| Date Performed                                 | 12/09/2011               |          | Jurisdiction                                   | NYSDO    | )T                             |
| Analysis Time Period                           | AM                       |          | Analysis Year                                  | 2026 No  | o-Build                        |
| Project Description Exit 4                     |                          |          |  |          |                                |
| ✓ Oper.(LOS)                                   | j                        |          | Des.(N)  | □ Pla    | anning Data                    |
| Flow Inputs                                    |                          |          |  |          |                                |
| Volume, V                                      | 4750                     | veh/h    | Peak-Hour Factor, PHF                          | 0.92     |                                |
| AADT   |                          | veh/day  | %Trucks and Buses, $P_T$                       | 2        |                                |
| Peak-Hr Prop. of AADT, K                       |                          |          | %RVs, P <sub>R</sub>                           | 0        |                                |
| Peak-Hr Direction Prop, D                      |                          |          | General Terrain:                               | Level    |                                |
| DDHV = AADT x K x D                            | 1.00                     | veh/h    | Grade % Length                                 | mi       |                                |
| Oriver type adjustment  Calculate Flow Adjustr | 1.00                     |          | Up/Down %                                      |          |                                |
|  |                          |          | F-   | 4.0      |                                |
| f <sub>p</sub>                                 | 1.00                     |          | E <sub>R</sub>                                 | 1.2      |                                |
| E <sub>T</sub>                                 | 1.5                      |          | $f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990    |                                |
| Speed Inputs                                   |                          |          | Calc Speed Adj and FF                          | <u>S</u> |                                |
| ane Width                                      | 12.0                     | ft       | $f_{LW}$                                       |          | mi/h                           |
| Rt-Shoulder Lat. Clearance                     | 6.0                      | ft       | f <sub>LC</sub>                                |          | mi/h                           |
| nterchange Density                             | 0.50                     | I/mi     |  |          |                                |
| Number of Lanes, N                             | 3                        |          | f <sub>ID</sub>                                |          | mi/h                           |
| FFS (measured)                                 | 56.0                     | mi/h     | f <sub>N</sub>                                 |          | mi/h                           |
| Base free-flow Speed, BFFS                     |                          | mi/h     | FFS  | 56.0     | mi/h                           |
| LOS and Performance                            | Measures                 |          | Design (N)                                     |          |                                |
|  |                          |          | Design (N)                                     |          |                                |
| Operational (LOS)                              |                          |          | Design LOS                                     |          |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$        | x f <sub>HV</sub> x 1738 | pc/h/ln  |  | rf v     |                                |
| (p)  | 1730                     | рслілії  | $V_p = (V \text{ or DDHV}) / (PHF \times N)$   | 'HV ^    | pc/h                           |
| 5  | 56.0                     | mi/h     | p)   |          |                                |
| $D = v_p / S$                                  | 31.0                     | pc/mi/ln | S  |          | mi/h                           |
| _OS  | D                        | t        | $D = v_p / S$                                  |          | pc/mi/ln                       |
|  |                          |          | Required Number of Lanes, N                    |          |                                |
| Glossary                                       | ,                        |          | Factor Location                                |          |                                |
| N - Number of lanes                            | S - Speed                |          | E - Evhibite 22 9 22 10                        |          | f Eyhihit 92 4                 |
| / - Hourly volume                              | D - Density              |          | E <sub>R</sub> - Exhibits 23-8, 23-10          |          | f <sub>LW</sub> - Exhibit 23-4 |
| v <sub>p</sub> - Flow rate                     | FFS - Free-flov          | v speed  | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-     | 17       | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                          | BFFS - Base fr           |          | f <sub>p</sub> - Page 23-12                    |          | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho                   |                          | opood    | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-     | 2, 23-3  | f <sub>ID</sub> - Exhibit 23-7 |
| - Directional design fit                       | Jui Volume               |          |  |          |                                |



| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> , S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | V <sub>B</sub> , S, D |

| General Information                     |                          |               | Site Information                             |                       |                                |  |  |  |  |
|---|--------------------------|---------------|--|-----------------------|--------------------------------|--|--|--|--|
| Analyst                                 | SEB                      |               | Highway/Direction of Travel                  | Northbou              | ınd I-87                       |  |  |  |  |
| Agency or Company                       | CHA                      |               | From/To                                      | Exit 4 to             | Exit 5                         |  |  |  |  |
| Date Performed                          | 6/22/2011                |               | Jurisdiction                                 | NYSDOT                |                                |  |  |  |  |
| Analysis Time Period                    | AM                       |               | Analysis Year                                | 2026 No-              | -Build                         |  |  |  |  |
| Project Description Exit 4              |                          |               |  |                       |                                |  |  |  |  |
| ✓ Oper.(LOS)                            |                          |               | Des.(N)                                      | Pla                   | nning Data                     |  |  |  |  |
| Flow Inputs                             |                          |               |  |                       |                                |  |  |  |  |
| Volume, V                               | 2750                     | veh/h         | Peak-Hour Factor, PHF                        | 0.92                  |                                |  |  |  |  |
| AADT                                    |                          | veh/day       | %Trucks and Buses, $P_T$                     | 2                     |                                |  |  |  |  |
| Peak-Hr Prop. of AADT, K                |                          |               | %RVs, P <sub>R</sub>                         | 0                     |                                |  |  |  |  |
| Peak-Hr Direction Prop, D               |                          |               | General Terrain:                             | Level                 |                                |  |  |  |  |
| DDHV = AADT x K x D                     | 4.00                     | veh/h         | Grade % Length                               | mi                    |                                |  |  |  |  |
| Driver type adjustment                  | 1.00                     |               | Up/Down %                                    |                       |                                |  |  |  |  |
| Calculate Flow Adjustr                  |                          |               | _  |                       |                                |  |  |  |  |
| f <sub>p</sub>                          | 1.00                     |               | E <sub>R</sub>                               | 1.2                   |                                |  |  |  |  |
| E <sub>T</sub>                          | 1.5                      |               | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990                 |                                |  |  |  |  |
| Speed Inputs                            |                          |               | Calc Speed Adj and FF                        | S                     |                                |  |  |  |  |
| Lane Width                              | 12.0                     | ft            | f <sub>LW</sub>                              |                       | mi/h                           |  |  |  |  |
| Rt-Shoulder Lat. Clearance              | 6.0                      | ft            | f <sub>LC</sub>                              |                       | mi/h                           |  |  |  |  |
| Interchange Density                     | 0.50                     | l/mi          | i _  |                       |                                |  |  |  |  |
| Number of Lanes, N                      | 3                        |               | f <sub>ID</sub>                              |                       | mi/h                           |  |  |  |  |
| FFS (measured)                          | 56.0                     | mi/h          | f <sub>N</sub>                               |                       | mi/h                           |  |  |  |  |
| Base free-flow Speed, BFFS              |                          | mi/h          | FFS  | 56.0                  | mi/h                           |  |  |  |  |
| LOS and Performance                     | Measures                 |               | Design (N)                                   |                       |                                |  |  |  |  |
|   |                          |               | Design (N)                                   |                       |                                |  |  |  |  |
| Operational (LOS)                       |                          |               | Design LOS                                   |                       |                                |  |  |  |  |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$ | x t <sub>HV</sub> x 1006 | pc/h/ln       | $v_p = (V \text{ or DDHV}) / (PHF \times N)$ | x f <sub>in</sub> , x |                                |  |  |  |  |
| f <sub>p</sub> )                        | ,000                     | p 0/1//       | f )  | HV                    | pc/h                           |  |  |  |  |
| s                                       | 56.0                     | mi/h          | 'p'  |                       | :/le                           |  |  |  |  |
| $D = v_p / S$                           | 18.0                     | pc/mi/ln      | S  |                       | mi/h                           |  |  |  |  |
| Los                                     | В                        |               | $D = v_p / S$                                |                       | pc/mi/ln                       |  |  |  |  |
|   |                          |               | Required Number of Lanes, N                  | 1                     |                                |  |  |  |  |
| Glossary                                |                          |               | Factor Location                              |                       |                                |  |  |  |  |
| N - Number of lanes                     | S - Speed                |               | E <sub>R</sub> - Exhibits23-8, 23-10         |                       | f <sub>LW</sub> - Exhibit 23-4 |  |  |  |  |
| V - Hourly volume                       | D - Density              |               | $E_{T}$ - Exhibits 23-8, 23-10, 23-          | 11                    | f <sub>LC</sub> - Exhibit 23-5 |  |  |  |  |
| v <sub>p</sub> - Flow rate              | FFS - Free-flov          | v speed       | 1 ·  | 1 1                   |                                |  |  |  |  |
| LOS - Level of service                  | BFFS - Base fr           | ee-flow speed | f <sub>p</sub> - Page 23-12                  | 0.000                 | f <sub>N</sub> - Exhibit 23-6  |  |  |  |  |
| DDHV - Directional design ho            |                          | •             | LOS, S, FFS, v <sub>p</sub> - Exhibits 23    | -2, 23-3              | f <sub>ID</sub> - Exhibit 23-7 |  |  |  |  |
|   |                          |               |  |                       |                                |  |  |  |  |

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### BASIC FREEWAY SEGMENTS WORKSHEET Average Passenger-Car Speed (mi/h) Free-Flow Speed FFS = 75 mith Application Output Input 70 mid 70 Operational (LOS) FFS, N, v<sub>D</sub> LOS, S, D 65 milh FFS, LOS, Vn N, S, D 60 midr Design (N) 60 55 mish Design (v<sub>n</sub>) FFS, LOS, N Vp. S. D 50 FFS, N, AADT LOS, S, D Planning (LOS) Planning (M) FFS. LOS. AADT N, S, D Planning (v<sub>n</sub>) FFS, LOS, N v<sub>p</sub>, S, D 30 2000 2400 200 1200 1600 400 Flow Rate (pc/h/lin) General Information Site Information Highway/Direction of Travel Analyst Southbound I-87 SEB Agency or Company CHA From/To Exit 5 to Exit 4 Jurisdiction NYSDOT Date Performed 6/22/2011 2026 No-Build Analysis Time Period AM Analysis Year Project Description Exit 4 Des.(N) □ Planning Data Flow Inputs Volume, V 4450 veh/h Peak-Hour Factor, PHF 0.92 %Trucks and Buses, P<sub>⊤</sub> 2 AADT veh/day 0 %RVs, P<sub>R</sub> Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade Length mi Up/Down % 1.00 Driver type adjustment Calculate Flow Adjustments $E_R$ 1.00 1.2 $E_{T}$ 0.990 1.5 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Speed Inputs Calc Speed Adj and FFS ft Lane Width 12.0 $\mathbf{f}_{\mathsf{LW}}$ mi/h Rt-Shoulder Lat. Clearance 6.0 ft mi/h $f_{LC}$ 0.50 I/mi Interchange Density $f_{ID}$ mi/h 3 Number of Lanes, N $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 1628 pc/h/ln pc/h $f_p)$ $f_p)$ 56.0 mi/h mi/h $D = v_D / S$ 29.1 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS D Required Number of Lanes, N Factor Location Glossary S - Speed N - Number of lanes E<sub>R</sub> - Exhibits23-8, 23-10 f<sub>LW</sub> - Exhibit 23-4 - Hourly volume D - Density E<sub>T</sub> - Exhibits 23-8, 23-10, 23-11 f<sub>IC</sub> - Exhibit 23-5 Flow rate FFS - Free-flow speed f<sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 BFFS - Base free-flow speed LOS - Level of service LOS, S, FFS, v<sub>n</sub> - Exhibits 23-2, 23-3 f<sub>ID</sub> - Exhibit 23-7 DDHV - Directional design hour volume

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### Average Passenger-Car Speed (milh) Free-Flow Speed FFS = 75 minh Application Input Output 70 mish 70 Operational (LOS) FFS, N, VD LOS, S, D 65 midt 60 miih Design (N) FFS, LOS, Vn N, S, D 60 55 milh FFS, LOS, N Design (v<sub>o</sub>) Vp. S. D 50 Planning (LOS) FFS, N, AADT LOS, S, D Planning (M) FFS, LOS, AADT N, S, D 40 Planning (v<sub>n</sub>) FFS, LOS, N v<sub>p</sub>, S, D 30 400 200 1200 1600 2000 2400 Flow Rate (pc/h/lin) General Information Site Information Analyst Highway/Direction of Travel Northbound I-87 SEB Agency or Company CHA From/To Exit 5 to Exit 6 Date Performed Jurisdiction NYSDOT 6/22/2011 Analysis Time Period AMAnalysis Year 2026 No-Build Project Description Exit 4 Oper.(LOS) ☐ Des.(N) Planning Data Flow Inputs Volume, V 2550 Peak-Hour Factor, PHF 0.92 veh/h AADT veh/day %Trucks and Buses, P<sub>T</sub> 2 0 Peak-Hr Prop. of AADT, K %RVs, P<sub>R</sub> Peak-Hr Direction Prop, D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments 1.00 $E_R$ 1.2 $E_{T}$ 1.5 $f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]$ 0.990 Speed Inputs Calc Speed Adj and FFS Lane Width 12.0 ft $f_{LW}$ mi/h Rt-Shoulder Lat. Clearance 6.0 ft $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h 4 Number of Lanes, N $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h Design (N LOS and Performance Measures Design (N) Operational (LOS) Design LOS $v_n = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times I)$ 700 $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ pc/h/ln f<sub>p</sub>) pc/h 56.0 mi/h mi/h $D = v_{D} / S$ 12.5 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS В Required Number of Lanes, N Glossary Factor Location N - Number of lanes S - Speed E<sub>R</sub> - Exhibits23-8, 23-10 f<sub>LW</sub> - Exhibit 23-4 V - Hourly volume D - Density E<sub>T</sub> - Exhibits 23-8, 23-10, 23-11 f<sub>IC</sub> - Exhibit 23-5 - Flow rate FFS - Free-flow speed f<sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 BFFS - Base free-flow speed LOS - Level of service LOS, S, FFS, v<sub>p</sub> - Exhibits 23-2, 23-3 f<sub>ID</sub> - Exhibit 23-7 DDHV - Directional design hour volume Generated: 12/12/2011 4:02 PM

**BASIC FREEWAY SEGMENTS WORKSHEET** 

### Average Passenger-Car Speed (mith) Frce-Flow Spred FFS = 75 mid Application Input Output 70 miih 70 Operational (LOS) FFS, N, v<sub>D</sub> LOS, S, D 65 midt 60 midt Design (N) FFS, LOS, Vo N, S, D 60 55 milh FFS, LOS, N Design (v<sub>p</sub>) v<sub>p</sub>, S, D 50 Planning (LOS) FFS, N, AADT LOS, S, D Planning (N) FFS, LOS, AADT N, S, D 40 v<sub>p</sub>, S, D Planning (v<sub>n</sub>) FFS, LOS, N 30 200 1200 400 1600 2000 2400 Flow Rate (pc/h/lin) General Information Site Information Analyst SEB Highway/Direction of Travel Southbound I-87 Agency or Company CHA From/To Exit 6 to Exit 5 Date Performed Jurisdiction NYSDOT 6/22/2011 Analysis Time Period AM Analysis Year 2026 No-Build Project Description Exit 4 Oper.(LOS) □ Des.(N) □ Planning Data Flow Inputs Volume, V 6050 Peak-Hour Factor, PHF veh/h 0.92 AADT %Trucks and Buses, P<sub>T</sub> veh/day 2 0 Peak-Hr Prop. of AADT, K %RVs, P<sub>R</sub> Peak-Hr Direction Prop, D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments 1.00 $E_R$ 1.2 $E_T$ 1.5 $f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]$ 0.990 Speed Inputs Calc Speed Adj and FFS Lane Width 12.0 ft $f_{LW}$ mi/h Rt-Shoulder Lat. Clearance 6.0 ft $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h Number of Lanes, N 4 $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_{\rm p} = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 1660 pc/h/ln $v_0 = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ $f_p)$ pc/h 56.0 mi/h mi/h $D = v_{p} / S$ 29.6 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS D Required Number of Lanes, N Glossary **Factor Location** N - Number of lanes S - Speed E<sub>R</sub> - Exhibits23-8, 23-10 f<sub>IW</sub> - Exhibit 23-4 - Hourly volume D - Density E<sub>T</sub> - Exhibits 23-8, 23-10, 23-11 f<sub>LC</sub> - Exhibit 23-5 Flow rate FFS - Free-flow speed <sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed f<sub>ID</sub> - Exhibit 23-7 LOS, S, FFS, v<sub>n</sub> - Exhibits 23-2, 23-3 DDHV - Directional design hour volume

BASIC FREEWAY SEGMENTS WORKSHEET

|                                | <u>R</u> AI                               | MPS AND                       | KAMP JUNG                    | <u>STIONS W</u>              | OKKSHE  | <u> </u>                 |                                      |                          |                                   |  |  |  |
|--------------------------------|---|-------------------------------|------------------------------|------------------------------|---|--------------------------|--------------------------------------|--------------------------|-----------------------------------|--|--|--|
| General Infor                  | mation                                    |                               |                              | Site Infor                   | mation  |                          |                                      |                          |                                   |  |  |  |
| Analyst SEB Freeway/Dir of Tra |   |                               |                              |                              |   | Northbound I-8           | 7                                    |                          |                                   |  |  |  |
| Agency or Company              | CHA                                       |                               | Ju                           | nction                       | 1   | Exit 2W On-Ra            | mp                                   |                          |                                   |  |  |  |
| Date Performed                 | 9/08/                                     | 2011                          | Ju                           | risdiction                   | NYSDOT  |                          |                                      |                          |                                   |  |  |  |
| nalysis Time Period            | AM  |                               | An                           | alysis Year                  | 2026 No-Build   |                          |                                      |                          |                                   |  |  |  |
| Project Description            | Exit 4                                    |                               |                              |                              |   |                          |                                      |                          |                                   |  |  |  |
| nputs                          |   |                               |                              |                              |   |                          |                                      |                          |                                   |  |  |  |
| lpstream Adj Ramp              |   | Terrain: Level                |                              |                              |   |                          |                                      | Downstre<br>Ramp         | eam Adj                           |  |  |  |
| ▼ Yes ☐ On                     |   |                               |                              |                              |   |                          |                                      | ☐ Yes                    | □ On                              |  |  |  |
| No  ✓ Off                      | :   |                               |                              |                              |   |                          |                                      | ™ No                     | ☐ Off                             |  |  |  |
| _ <sub>up</sub> = 1100 ft      |   |                               |                              |                              |   |                          |                                      | L <sub>down</sub> =      | ft                                |  |  |  |
| / /00                          | . I. /I.                                  | S                             | $_{\rm F} = 56.0  {\rm mph}$ |                              | $S_{FR} = 4$  | 0.0 mph                  |                                      | V <sub>D</sub> =         | veh/h                             |  |  |  |
| u' = 680  ve                   |   |                               |                              | show lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$   |                          |                                      | VD -                     | VCII/II                           |  |  |  |
| Conversion to                  | pc/h Und                                  | der Base C                    | onditions                    |                              |   |                          |                                      |                          |                                   |  |  |  |
| (pc/h)                         | V<br>(Veh/hr)                             | PHF                           | Terrain                      | %Truck                       | %Rv   | f <sub>HV</sub>          | f <sub>p</sub>                       | v = V/PH                 | Fxf <sub>HV</sub> xf <sub>p</sub> |  |  |  |
| reeway                         | 2650                                      | 0.92                          | Level                        | 2                            | 0   | 0.990                    | 1.00                                 |                          | 2909                              |  |  |  |
| Ramp                           | 360                                       | 0.92                          | Level                        | 2                            | 0   | 0.990                    | 1.00                                 |                          | 395                               |  |  |  |
| JpStream                       | 680                                       | 0.92                          | Level                        | 2                            | 0   | 0.990                    | 1.00                                 |                          | 747                               |  |  |  |
| DownStream                     |   | 1 1                           |                              | ĺ                            |   |                          |                                      |                          |                                   |  |  |  |
|                                |   | Merge Areas                   |                              |                              |   |                          | Diverge Are                          | eas                      |                                   |  |  |  |
| stimation of                   | V <sub>12</sub>                           |                               |                              |                              | Estimation of v <sub>12</sub>   |                          |                                      |                          |                                   |  |  |  |
|                                | V <sub>12</sub> = V <sub>F</sub>          | (P)                           |                              |                              |   |                          |                                      |                          |                                   |  |  |  |
| _                              | 12 1                                      |                               | 5 0 or 05 0\                 |                              |   | V <sub>12</sub>          | $= V_R + (V_F)$                      |                          |                                   |  |  |  |
| EQ =                           |   | (Equation 2                   |                              |                              | L <sub>EQ</sub> = (Equation 25-8 or 25-9)   |                          |                                      |                          |                                   |  |  |  |
| FM =                           | 0.601                                     | using Equation                | on (Exhibit 25-5)            |                              | P <sub>FD</sub> = using Equation (Exhibit 25-12)  |                          |                                      |                          |                                   |  |  |  |
| 12 =                           | 1749                                      |                               |                              |                              | V <sub>12</sub> = pc/h  |                          |                                      |                          |                                   |  |  |  |
| or V <sub>av34</sub>           |   | pc/h (Equatio                 | n 25-4 or 25-                |                              | V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 25-15 or 25-16)                          |                          |                                      |                          |                                   |  |  |  |
|                                | 5)  |                               |                              |                              | Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No                             |                          |                                      |                          |                                   |  |  |  |
| s $V_3$ or $V_{av34} > 2,70$   |   |                               |                              |                              |   |                          |                                      |                          |                                   |  |  |  |
| s $V_3$ or $V_{av34} > 1.5$ *  | $V_{12}/2 \square Ye$                     | s 🗹 No                        |                              |                              | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No<br>If Yes, $V_{12a} =$ pc/h (Equation 25-18) |                          |                                      |                          |                                   |  |  |  |
| Yes,V <sub>12a</sub> =         | pc/h                                      | (Equation 25-                 | 8)                           |                              | If Yes,V <sub>12a</sub> =   |                          | pc/n (Equ                            | ation 25-18)             |                                   |  |  |  |
| Capacity Che                   | cks                                       |                               |                              |                              | Capacity  | y Checks                 |                                      |                          |                                   |  |  |  |
|                                | Actual                                    | Ca                            | pacity                       | LOS F?                       |   | Actu                     | al                                   | Capacity                 | LOS F?                            |  |  |  |
|                                |   |                               |                              | 1                            | V <sub>F</sub>  |                          | Exhibit                              | 25-14                    |                                   |  |  |  |
| $V_{FO}$                       | 3304                                      | Exhibit 25-7                  |                              | No                           | $V_{FO} = V_{F}$  | - \/                     | Exhibit                              |                          |                                   |  |  |  |
| * FO                           | 3304                                      | LAHIDIC 25-7                  |                              | INO                          |   | <sup>v</sup> R           |                                      |                          |                                   |  |  |  |
|                                |   |                               |                              |                              | V <sub>R</sub>  |                          | Exhibit                              |                          |                                   |  |  |  |
| low Entering                   | Merge In                                  | T .                           |                              |                              | Flow En   | tering Div               |                                      |                          |                                   |  |  |  |
|                                | Actual                                    | 1                             | esirable                     | Violation?                   |   | Actual                   |                                      | Desirable                | Violation?                        |  |  |  |
| V <sub>R12</sub>               | 2144                                      | Exhibit 25-7                  | 4600:All                     | No                           | V <sub>12</sub>   |                          | Exhibit 25-                          | 14                       |                                   |  |  |  |
| evel of Serv                   | ice Detern                                | nination (i                   | not F)                       |                              | Level of  | Service I                | Determina                            | ation (if n              | ot F)                             |  |  |  |
|                                |   | 0.0078 V <sub>12</sub> - 0.00 |                              |                              |   | D <sub>R</sub> = 4.252 + | - 0.0086 V <sub>1</sub>              | , - 0.009 L <sub>D</sub> |                                   |  |  |  |
| <sub>R</sub> = 16.7 (pc.       | - 1                                       | 12                            | ,,                           |                              |   | c/mi/ln)                 | 12                                   |                          |                                   |  |  |  |
| LOS = B (Exhibit 25-4)         |   |                               |                              |                              |   | LOS = (Exhibit 25-4)     |                                      |                          |                                   |  |  |  |
| Speed Detern                   |   |                               |                              |                              | `   | etermina                 | tion                                 |                          |                                   |  |  |  |
| POUR PEIEIII                   |   |                               |                              |                              |   |                          |                                      |                          |                                   |  |  |  |
|                                | oit 25-19)                                |                               |                              |                              | 3   | xhibit 25-19)            | 10)                                  |                          |                                   |  |  |  |
| -                              | S <sub>R</sub> = 52.0 mph (Exhibit 25-19) |                               |                              |                              |   |                          | S <sub>R</sub> = mph (Exhibit 25-19) |                          |                                   |  |  |  |
| 9                              | Exhibit 25-19)                            |                               |                              |                              | ., .  |                          |                                      |                          |                                   |  |  |  |
| <sub>R</sub> = 52.0 mph (      | Exhibit 25-19)<br>Exhibit 25-19)          |                               |                              |                              | ., .  | oh (Exhibit 25-          |                                      |                          |                                   |  |  |  |

|   |                          | IVAINIL             | S AND RAM     |                      |  |                        |                                       |                                       |                   |                                    |  |
|---|--------------------------|---------------------|---------------|----------------------|--|------------------------|---------------------------------------|---------------------------------------|-------------------|------------------------------------|--|
| General Inf   |                          |                     |               | Site Infor           |  |                        |                                       |                                       |                   |                                    |  |
| Analyst SEB Freeway/Dir of Agency or Company CHA Junction Date Performed 9/08/2011 Jurisdiction Analysis Time Period AM Analysis Year |                          |                     |               |                      |  | Exit 4<br>NYSD         | ound I-87<br>NB Off<br>OT<br>Io-Build |                                       |                   |                                    |  |
| Project Descriptio  |                          |                     |               | ,                    |  |                        |                                       |                                       |                   |                                    |  |
| Inputs  |                          |                     |               |                      |  |                        |                                       |                                       |                   |                                    |  |
| Upstream Adj Rar  | np                       | Terrain: Leve       | I             |                      |  |                        |                                       |                                       | Downstrea<br>Ramp | m Adj                              |  |
| ☐ Yes ☐   | On                       |                     |               |                      |  |                        |                                       |                                       | ✓ Yes             | ✓ On                               |  |
| ✓ No ☐  | Off                      |                     |               |                      |  |                        |                                       |                                       | □ No              | ☐ Off                              |  |
| L <sub>up</sub> = ft  |                          | S                   | FF = 56.0 mph |                      | S <sub>FR</sub> = 4  | 10.0 mj                | oh                                    |                                       | down              | 2660 ft                            |  |
| V <sub>u</sub> = vel  | n/h                      |                     | Sketch (      | show lanes, $L_{A'}$ | $L_{D'}V_{R'}V_{f}$  |                        |                                       |                                       | V <sub>D</sub> =  | 650 veh/                           |  |
| Conversion  | to pc/h Un               | der Base (          | Conditions    |                      |  |                        |                                       |                                       |                   |                                    |  |
| (pc/h) V PHF Terrain %Truck   |                          |                     |               |                      | %Rv  |                        | $f_{HV}$                              | f <sub>p</sub>                        | v = V/PHF         | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway   | 3000                     | 0.92                | Level         | 2                    | 0  | 0                      | .990                                  | 1.00                                  | 329               | 93                                 |  |
| Ramp  | 770                      | 0.82                | Level         | 2                    | 0  | 0                      | .990                                  | 1.00                                  | 948               |                                    |  |
| UpStream  | /50                      | 0.00                | 1 1           |                      |  | +                      | 000                                   | 1.00                                  | 74                | 4                                  |  |
| DownStream  | 650                      | 0.92<br>Merge Areas | Level         | 2                    | 0  | 0                      | .990                                  | 1.00<br>Diverge Areas                 | 71                | 4                                  |  |
| Estimation  | of v                     | iviei ge Ai eas     |               |                      | Estimation of v <sub>12</sub>  |                        |                                       |                                       |                   |                                    |  |
|   |                          | (D.)                |               |                      | Lotimati   |                        |                                       | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | \D                |                                    |  |
|   | $V_{12} = V_F$           |                     |               |                      | $V_{12} = V_R + (V_F - V_R)P_{FD}$   |                        |                                       |                                       |                   |                                    |  |
| L <sub>EQ</sub> =   |                          | ation 25-2 or       |               |                      | L <sub>EQ</sub> = (Equation 25-8 or 25-9)  |                        |                                       |                                       |                   |                                    |  |
| P <sub>FM</sub> =   | _                        | g Equation (E       | Exhibit 25-5) |                      | P <sub>FD</sub> = 0.634 using Equation (Exhibit 25-12)   |                        |                                       |                                       |                   |                                    |  |
| V <sub>12</sub> =   | pc/h                     |                     |               |                      | V <sub>12</sub> =  |                        |                                       | 435 <b>pc/h</b>                       |                   |                                    |  |
| $V_{3}$ or $V_{av34}$   |                          | (Equation 25        | 5-4 or 25-5)  |                      | $V_3$ or $V_{av34}$ 858 pc/h (Equation 25-15 or 25-16) Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\bigvee$ Yes $\bigvee$ No |                        |                                       |                                       |                   |                                    |  |
|   | ,700 pc/h?               |                     |               |                      |  |                        |                                       |                                       |                   |                                    |  |
| Is $V_3$ or $V_{av34} > 1$  | ·=                       |                     |               |                      | 0 0.0  |                        |                                       | TYes   ✓ No                           |                   |                                    |  |
| If Yes,V <sub>12a</sub> =   | pc/h                     | (Equation 25        | 5-8)          |                      | If Yes,V <sub>12a</sub> =  | :                      | ŗ                                     | oc/h (Equation                        | 25-18)            |                                    |  |
| Capacity C  | hecks                    |                     |               |                      | Capacity   | y Ch                   | ecks                                  |                                       |                   |                                    |  |
|   | Actual (                 |                     | apacity       | LOS F?               |  |                        | Actual                                |                                       | pacity            | LOS F                              |  |
|   |                          |                     |               |                      | V <sub>F</sub>   |                        | 3293                                  | Exhibit 25-1                          | 4 6780            | No                                 |  |
| $V_{FO}$  |                          | Exhibit 25-7        |               |                      | $V_{FO} = V_{F}$   | - $V_R$                | 2345                                  | Exhibit 25-1                          | 4 6780            | No                                 |  |
|   |                          |                     |               |                      | V <sub>R</sub>   |                        | 948                                   | Exhibit 25-3                          | 3 2100            | No                                 |  |
| Flow Enteri   | ing Merge lı             | nfluence A          | rea           | <u> </u>             | Flow En  | terii                  | na Dive                               | rge Influen                           | ce Area           | <u> </u>                           |  |
|   | Actual                   |                     | Desirable     | Violation?           |  | - 1                    | Actual                                | Max Desiral                           |                   | Violation                          |  |
| V <sub>R12</sub>  |                          | Exhibit 25-7        |               |                      | V <sub>12</sub>  |                        | 2435                                  | Exhibit 25-14                         | 4400:All          | No                                 |  |
|   | rvice Deteri             | mination (          | f not F)      | -                    | Level of   | Ser                    | vice De                               | terminatio                            | n (if not l       | <del></del>                        |  |
|   | 0.00734 v <sub>R</sub> + |                     |               |                      |  |                        |                                       | .0086 V <sub>12</sub> - 0             | _                 | •                                  |  |
|   | mi/ln)                   | 12                  | n             |                      |  | • • •                  | :/mi/ln)                              | 12                                    |                   |                                    |  |
| LOS = (Exhibit 25-4)  |                          |                     |               |                      |  | LOS = C (Exhibit 25-4) |                                       |                                       |                   |                                    |  |
| Speed Dete  |                          |                     |               |                      | Speed D  | •                      |                                       | on                                    |                   |                                    |  |
|   | 25-19)                   |                     |               |                      |  |                        | xhibit 25                             |                                       |                   |                                    |  |
| · ·   | Exhibit 25-19)           |                     |               |                      |  | •                      | n (Exhibit                            | *                                     |                   |                                    |  |
|   |                          |                     |               |                      | 1 "  | -                      | n (Exhibit                            |                                       |                   |                                    |  |
|   | xhibit 25-19)            |                     |               |                      | l. *   |                        | n (Exhibit                            |                                       |                   |                                    |  |
| S = mph (Exhibit 25-14)   |                          |                     |               |                      |  | - 5 HHD                |                                       | Z. 1= 1:11                            |                   |                                    |  |

|  |                            | MIPS AND                        | RAMP JUNG                |                              |  |                           |                          |                        |                                      |  |
|--|----------------------------|---------------------------------|--------------------------|------------------------------|--|---------------------------|--------------------------|------------------------|--------------------------------------|--|
| General Info   | ormation                   |                                 |                          | Site Infor                   | mation   |                           |                          |                        |                                      |  |
| Analyst SEB Freeway/Dir of Tagency or Company CHA Junction  Date Performed 9/08/2011 Jurisdiction  Analysis Time Period AM Analysis Year |                            |                                 |                          |                              | Travel Northbound I-87 Exit 4 NB On-Ramp NYSDOT 2026 No-Build      |                           |                          |                        |                                      |  |
| Project Description  | n Exit 4                   |                                 |                          |                              |  |                           |                          |                        |                                      |  |
| Inputs   |                            | l <del></del>                   |                          |                              |  |                           |                          | 1                      |                                      |  |
| Jpstream Adj Ran   |                            | Terrain: Leve                   | el .                     |                              |  |                           |                          | Downstre<br>Ramp       | eam Adj                              |  |
| Yes C  |                            |                                 |                          |                              |  |                           |                          | ✓ Yes                  | ☐ On                                 |  |
| ™ No □   | Jπ                         |                                 |                          |                              |  |                           |                          | □ No                   | ✓ Off                                |  |
| - <sub>up</sub> = ft   |                            | S                               | <sub>FF</sub> = 56.0 mph |                              | S <sub>FR</sub> = 4  | 0.0 mph                   |                          | L <sub>down</sub> =    | 3500 ft                              |  |
| / <sub>u</sub> = veh   |                            |                                 | Sketch (                 | show lanes, L <sub>A</sub> , |  |                           |                          | $V_D =$                | 470 veh/h                            |  |
| Conversion   | to pc/h Ur                 | nder Base                       | Conditions               |                              | _  | _                         |                          |                        |                                      |  |
| (pc/h)   | V<br>(Veh/hr)              | PHF                             | Terrain                  | %Truck                       | %Rv  | f <sub>HV</sub>           | f <sub>p</sub>           | v = V/PH               | F x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 2250                       | 0.92                            | Level                    | 2                            | 0  | 0.990                     | 1.00                     |                        | 2470                                 |  |
| Ramp   | 650                        | 0.92                            | Level                    | 2                            | 0  | 0.990                     | 1.00                     |                        | 714                                  |  |
| UpStream   |                            |                                 |                          |                              |  |                           |                          |                        |                                      |  |
| DownStream   | 470                        | 0.96                            | Level                    | 2                            | 0  | 0.990                     | 1.00                     |                        | 494                                  |  |
| Estimation   | of w                       | Merge Areas                     |                          |                              | Fotimoti   | ion of v                  | Diverge Are              | as                     |                                      |  |
| Estimation   |                            |                                 |                          |                              | ESuman   | ion of v <sub>12</sub>    |                          |                        |                                      |  |
|  | $V_{12} = V$               | <sub>F</sub> (P <sub>FM</sub> ) |                          |                              |  | V <sub>12</sub>           | $= V_R + (V_F -$         | $V_R)P_{FD}$           |                                      |  |
| -EQ =  | 2399.2                     | 22 (Equation                    | 25-2 or 25-3)            |                              | L <sub>EQ</sub> = (Equation 25-8 or 25-9)                          |                           |                          |                        |                                      |  |
| P <sub>FM</sub> =  | 0.603                      | using Equat                     | ion (Exhibit 25-5)       |                              | P <sub>FD</sub> = using Equation (Exhibit 25-12)                   |                           |                          |                        |                                      |  |
| / <sub>12</sub> =  | 1489                       | pc/h                            |                          |                              | V <sub>12</sub> =  |                           | pc/h                     |                        |                                      |  |
| $V_3$ or $V_{av34}$  | 981                        | pc/h (Equatio                   | n 25-4 or 25-5)          |                              | V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 25-15 or 25-16) |                           |                          |                        |                                      |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2   |                            |                                 |                          |                              |  | , > 2,700 pc/h            | ? ☐ Yes ☐                | No                     |                                      |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.  |                            |                                 |                          |                              |  | •                         | □ Yes □                  |                        |                                      |  |
| f Yes,V <sub>12a</sub> =   |                            | (Equation 25                    | 5-8)                     |                              | If Yes,V <sub>12a</sub> =  |                           | pc/h (Equa               |                        |                                      |  |
| Capacity Cl  |                            | . (=900.00.1                    |                          |                              | <del></del>  | y Checks                  | P 0/ (= q a.c            |                        | <u>'</u>                             |  |
| Supacity Of  | Actual                     |                                 | Capacity                 | LOS F?                       | Joapach  | Actu                      | al                       | Capacity               | LOS F                                |  |
|  | notaai                     |                                 | ариску                   | 2031.                        | V <sub>F</sub>   | 71010                     | Exhibit 2                | 1                      | 2001                                 |  |
| M  | 2104                       | F.,L!L!4 0F 7                   |                          | N-                           |  | \/                        | _                        |                        | _                                    |  |
| $V_{FO}$   | 3184                       | Exhibit 25-7                    |                          | No                           | $V_{FO} = V_{F}$   | - v <sub>R</sub>          | Exhibit 2                |                        | _                                    |  |
|  |                            |                                 |                          |                              | V <sub>R</sub>   |                           | Exhibit 2                |                        |                                      |  |
| low Enteri   |                            | _                               |                          |                              | Flow En  | 1                         | erge Influ               |                        |                                      |  |
|  | Actual                     |                                 | Desirable                | Violation?                   |  | Actual                    | _                        | esirable               | Violation?                           |  |
| V <sub>R12</sub>   | 2203                       | Exhibit 25-7                    | 4600:All                 | No                           | V <sub>12</sub>  |                           | Exhibit 25-1             |                        |                                      |  |
| Level of Se  |                            |                                 |                          |                              | <del></del>  |                           | Determina                |                        | ot F)                                |  |
| $D_{R} = 5.475$  | + 0.00734 v <sub>R</sub> + | - 0.0078 V <sub>12</sub> - 0.0  | 00627 L <sub>A</sub>     |                              |  | $O_{R} = 4.252 + 10^{-1}$ | - 0.0086 V <sub>12</sub> | - 0.009 L <sub>D</sub> |                                      |  |
| O <sub>R</sub> = 16.7  | pc/mi/ln)                  |                                 |                          |                              | $D_R = (p$   | c/mi/ln)                  |                          |                        |                                      |  |
| LOS = B (Exhibit 25-4)   |                            |                                 |                          |                              |  | xhibit 25-4)              |                          |                        |                                      |  |
| Speed Dete   | rmination                  |                                 |                          |                              | Speed D  | etermina                  | tion                     |                        |                                      |  |
| •  | Exibit 25-19)              |                                 |                          |                              |  | xhibit 25-19)             |                          |                        |                                      |  |
| •  | h (Exhibit 25-19)          | ١                               |                          |                              |  | oh (Exhibit 25-           | 19)                      |                        |                                      |  |
|  |                            |                                 |                          |                              |  | oh (Exhibit 25-           |                          |                        |                                      |  |
|  | h (Exhibit 25-19)          |                                 |                          |                              | 1  | on (Exhibit 25-           |                          |                        |                                      |  |
| S = 52.7 mph (Exhibit 25-14)   |                            |                                 |                          |                              |  |                           |                          |                        |                                      |  |

|   |                        | - IVAIIII (              | S AND RAM                 |                              |   |   |                 |  |                     |                                    |  |  |
|---|------------------------|--------------------------|---------------------------|------------------------------|---|---|-----------------|--|---------------------|------------------------------------|--|--|
| General Infor   |                        |                          |                           | Site Infor                   |   |   |                 |  |                     |                                    |  |  |
| Analyst SEB Freeway/Dir of Agency or Company CHA Junction Date Performed 9/08/2011 Jurisdiction Analysis Time Period AM Analysis Year |                        |                          |                           |                              |   | Exit 5 N<br>NYSD(                                 |                 |  |                     |                                    |  |  |
| Project Description   |                        |                          |                           | <u> </u>                     |   |   |                 |  |                     |                                    |  |  |
| Inputs  |                        |                          |                           |                              |   |   |                 |  |                     |                                    |  |  |
| Upstream Adj Ramp   |                        | Terrain: Level           |                           |                              |   |   |                 |  | Downstrea<br>Ramp   | m Adj                              |  |  |
| Yes Or  |                        |                          |                           |                              |   |   |                 |  | ☐ Yes               | □ On                               |  |  |
| □ No □ Of   | f                      |                          |                           |                              |   |   |                 |  | ✓ No                | ☐ Off                              |  |  |
| L <sub>up</sub> = 3500  | ft                     |                          |                           |                              | _   |   |                 |  | L <sub>down</sub> = | ft                                 |  |  |
| $V_u = 650 \text{ ve}$  | eh/h                   | S                        | FF = 56.0 mph<br>Sketch ( | show lanes, L <sub>A</sub> , | $S_{FR} = 3$ $L_{D'}V_{R'}V_{f}$  | 85.0 mp   | h               |  | V <sub>D</sub> =    | veh/h                              |  |  |
| Conversion to   | o pc/h Und             | der Base C               | Conditions                |                              |   |   |                 |  |                     |                                    |  |  |
| (pc/h) V PHF Terrain %Truck   |                        |                          |                           |                              | %Rv   |   | f <sub>HV</sub> | f <sub>p</sub>                         | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway   | 2750                   | 0.92                     | Level                     | 2                            | 0   | 0.  | 990             | 1.00                                   | 301                 | 9                                  |  |  |
| Ramp  | 470                    | 0.96                     | Level                     | 2                            | 0   | 0.  | 990             | 1.00                                   | 49                  | 4                                  |  |  |
| UpStream  | 650                    | 0.92                     | Level                     | 2                            | 0   | 0.  | 990             | 1.00                                   | 71                  | 4                                  |  |  |
| DownStream  |                        | Morgo Arono              |                           |                              |   |   |                 | Diverge Areas                          |                     |                                    |  |  |
| Estimation of   |                        | Merge Areas              |                           |                              | Estimation of V <sub>12</sub>   |   |                 |  |                     |                                    |  |  |
| L3timation of   |                        |                          |                           |                              | LStillati   | 1011  |                 |  |                     |                                    |  |  |
|   | $V_{12} = V_F$         |                          |                           |                              |   |   |                 | = V <sub>R</sub> + (V <sub>F</sub> - V |                     |                                    |  |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)   |                        |                          |                           |                              |   | L <sub>EQ</sub> = 6939.25 (Equation 25-8 or 25-9) |                 |  |                     |                                    |  |  |
| P <sub>FM</sub> =   | _                      | Equation (E              | xhibit 25-5)              |                              | $P_{FD}$ = 0.722 using Equation (Exhibit 25-12)   |   |                 |  |                     |                                    |  |  |
| V <sub>12</sub> =   | pc/h                   |                          |                           |                              | $V_{12} = 2318 \text{ pc/h}$  |   |                 |  |                     |                                    |  |  |
| V <sub>3</sub> or V <sub>av34</sub>   |                        | (Equation 25             | -4 or 25-5)               |                              | $V_3$ or $V_{av34}$ 701 pc/h (Equation 25-15 or 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |   |                 |  |                     |                                    |  |  |
| Is $V_3$ or $V_{av34} > 2,70$   |                        |                          |                           |                              |   |   |                 |  |                     |                                    |  |  |
| Is $V_3$ or $V_{av34} > 1.5$  | · <del>-</del>         |                          |                           |                              |   |   |                 | TYes  ✓ No                             |                     |                                    |  |  |
| If Yes,V <sub>12a</sub> =   | pc/h                   | (Equation 25             | -8)                       |                              | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18)  |   |                 |  |                     |                                    |  |  |
| Capacity Che  | cks                    |                          |                           |                              | Capacity  | y Ch  | ecks            |  |                     |                                    |  |  |
|   | Actual                 | Ca                       | apacity                   | LOS F?                       |   |   | Actual          | ì                                      | pacity              | LOS F                              |  |  |
|   |                        |                          |                           |                              | V <sub>F</sub>  |   | 3019            | Exhibit 25-1                           | 4 6780              | No                                 |  |  |
| $V_{FO}$  |                        | Exhibit 25-7             |                           |                              | $V_{FO} = V_{F}$  | - V <sub>R</sub>                                  | 2525            | Exhibit 25-1                           | 4 6780              | No                                 |  |  |
|   |                        |                          |                           |                              | V <sub>R</sub>  |   | 494             | Exhibit 25-3                           | 3 2000              | No                                 |  |  |
| Flow Entering   | Merge In               | fluence A                | rea                       | <u>'</u>                     | Flow En   | terir   | g Dive          | rge Influen                            | ce Area             | •                                  |  |  |
|   | Actual                 |                          | Desirable                 | Violation?                   |   | _   | Actual          | Max Desiral                            |                     | Violation                          |  |  |
| V <sub>R12</sub>  |                        | Exhibit 25-7             |                           |                              | V <sub>12</sub>   |   | 2318            | Exhibit 25-14                          | 4400:All            | No                                 |  |  |
| Level of Serv   | ice Detern             | nination (i              | f not F)                  |                              | Level of  | Ser   | vice De         | terminatio                             | n (if not l         | <del>5</del> )                     |  |  |
| $D_R = 5.475 + 0.$  | 00734 v <sub>R</sub> + | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>    |                              |   | D <sub>R</sub> = 4                                | 1.252 + 0       | 0.0086 V <sub>12</sub> - 0.            | 009 L <sub>D</sub>  |                                    |  |  |
| D <sub>R</sub> = (pc/mi/  |                        |                          | ,,                        |                              | L   | •••   | /mi/ln)         | 12                                     | _                   |                                    |  |  |
| LOS = (Exhibit 25-4)  |                        |                          |                           |                              |   | LOS = C (Exhibit 25-4)                            |                 |  |                     |                                    |  |  |
| Speed Determ  |                        |                          |                           |                              | Speed D   | •   |                 | on                                     |                     |                                    |  |  |
| $M_S = $ (Exibit 25)  |                        |                          |                           |                              |   |   | xhibit 25       |  |                     |                                    |  |  |
| o .   | ibit 25-19)            |                          |                           |                              |   | •   | (Exhibit        | *                                      |                     |                                    |  |  |
|   |                        |                          |                           |                              |   | -   | (Exhibit        |  |                     |                                    |  |  |
| $S_0$ mph (Exhibit 25-19)   |                        |                          |                           |                              |   |   | (Exhibit        |  |                     |                                    |  |  |
| S = mph (Exhibit 25-14)   |                        |                          |                           |                              |   |   |                 |  |                     |                                    |  |  |

|   |                            | 13731911                           | S AND RAM                |  |                                     |                                     |  |   |                     |                                    |
|---|----------------------------|------------------------------------|--------------------------|--|-------------------------------------|-------------------------------------|--|---|---------------------|------------------------------------|
| General Ir  | nformation                 |                                    |                          | Site Infor   | mation                              |                                     |  |   |                     |                                    |
| Analyst<br>Agency or Com<br>Date Performed<br>Analysis Time F | d 9/0                      | IA<br>8/2011                       | Jı<br>Jı                 | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | ]<br>]                              | Southb<br>Exit 2V<br>NYSD<br>2026 N | V Off                                  |   |                     |                                    |
| Project Descrip   |                            |                                    |                          |  |                                     |                                     |  |   |                     |                                    |
| Inputs  |                            |                                    |                          |  |                                     |                                     |  |   |                     |                                    |
| Upstream Adj F  | ·                          | Terrain: Leve                      | I                        |  |                                     |                                     |  |   | Downstrea<br>Ramp   | m Adj                              |
|   | On                         |                                    |                          |  |                                     |                                     |  |   | ✓ Yes               | ✓ On                               |
| ✓ No  | Off                        |                                    |                          |  |                                     |                                     |  |   | □ No                | ☐ Off                              |
| L <sub>up</sub> = 1   | ft                         |                                    | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4                 | ΛΛ mr                               | h.                                     |   | L <sub>down</sub> = | 1300 ft                            |
|   | eh/h                       |                                    | Sketch (                 | show lanes, L <sub>A</sub>                                 |                                     | 0.0 111                             | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |   | V <sub>D</sub> =    | 360 veh/l                          |
| Conversion  | on to pc/h Ui              | nder Base                          | Conditions               |  |                                     |                                     |  |   |                     |                                    |
| (pc/h)  | V<br>(Veh/hr)              | PHF                                | Terrain                  | %Truck   | %Rv                                 |                                     | $f_{HV}$                               | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 5250                       | 0.92                               | Level                    | 2  | 0                                   | _                                   | .990                                   | 1.00  | 57 <i>6</i>         |                                    |
| Ramp  | 770                        | 0.92                               | Level                    | 2  | 0                                   | 0                                   | .990                                   | 1.00  | 84                  | 5                                  |
| UpStream<br>DownStream  | 360                        | 0.92                               | Level                    | 2  | 0                                   |                                     | .990                                   | 1.00  | 39                  | 5                                  |
| Downstream  | 300                        | Merge Areas                        | Level                    |  | 0                                   |                                     |  | Diverge Areas                                       | 37                  | <u> </u>                           |
| Estimation of v <sub>12</sub>                                 |                            |                                    |                          |  | Estimati                            | ion c                               |  | <u> </u>  |                     |                                    |
|   |                            | / <sub>F</sub> ( P <sub>EM</sub> ) |                          |  | 1                                   |                                     |  | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | s)P=s               |                                    |
| L <sub>EQ</sub> =   |                            | uation 25-2 or                     | 25-3)                    |  | L <sub>EQ</sub> =                   |                                     |  | Equation 25-8                                       |                     |                                    |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)               |                            |                                    |                          |  | P <sub>FD</sub> =                   |                                     |  | .577 using Ed                                       |                     | bit 25-12)                         |
| V <sub>12</sub> =   | pc/ł                       |                                    | ,                        |  | V <sub>12</sub> =                   |                                     |  | 683 pc/h  | ,                   |                                    |
| V <sub>3</sub> or V <sub>av34</sub>                           | pc/l                       | h (Equation 25                     | i-4 or 25-5)             |  | V <sub>3</sub> or V <sub>av34</sub> |                                     |  | 081 pc/h (Equ                                       | ation 25-15         | or 25-16                           |
|   | > 2,700 pc/h?   Y          |                                    | •                        |  |                                     | <sub>84</sub> > 2,7                 |  | TYes ☑ No   |                     |                                    |
| 0 4101  | > 1.5 * V <sub>12</sub> /2 |                                    |                          |  |                                     |                                     |  | Tyes ✓ No   |                     |                                    |
| If Yes,V <sub>12a</sub> =                                     | pc/l                       | n (Equation 25                     | 5-8)                     |  | If Yes,V <sub>12a</sub> =           |                                     | <br>F                                  | c/h (Equation                                       | 25-18)              |                                    |
| Capacity  | Checks                     |                                    |                          |  | Capacity                            |                                     | ecks                                   |   |                     |                                    |
|   | Actual                     | С                                  | apacity                  | LOS F?   |                                     |                                     | Actual                                 | Ca  | pacity              | LOS F                              |
|   |                            |                                    |                          |  | V <sub>F</sub>                      |                                     | 5764                                   | Exhibit 25-1  | 4 6780              | No                                 |
| $V_{FO}$  |                            | Exhibit 25-7                       |                          |  | $V_{FO} = V_{F}$                    | - V <sub>R</sub>                    | 4919                                   | Exhibit 25-1  | 4 6780              | No                                 |
|   |                            |                                    |                          |  | V <sub>R</sub>                      |                                     | 845                                    | Exhibit 25-3  | 3 2100              | No                                 |
| Flow Ente   | ering Merge l              | Influence A                        | rea                      |  | <u> </u>                            | terir                               | ng Dive                                | rge Influen   | ce Area             |                                    |
|   | Actual                     | 1                                  | Desirable                | Violation?   |                                     | _                                   | Actual                                 | Max Desiral   |                     | Violation                          |
| $V_{R12}$   |                            | Exhibit 25-7                       |                          |  | V <sub>12</sub>                     |                                     | 3683                                   | Exhibit 25-14                                       | 4400:All            | No                                 |
|   | Service Deter              | rmination (                        | if not F)                |  |                                     | Ser                                 | vice De                                | terminatio  | n (if not l         | <del>-</del> )                     |
| $D_{R} = 5.475$   | + 0.00734 v <sub>R</sub> - | + 0.0078 V <sub>12</sub> -         | 0.00627 L <sub>A</sub>   |  |                                     | $O_R = 4$                           | 4.252 + 0                              | .0086 V <sub>12</sub> - 0.                          | .009 L <sub>D</sub> |                                    |
| D <sub>R</sub> = (pc/mi/ln)                                   |                            |                                    |                          |  | D <sub>R</sub> = 33                 | .2 (pc                              | :/mi/ln)                               |   |                     |                                    |
| LOS = (E  | xhibit 25-4)               |                                    |                          |  | LOS = D                             | (Exhi                               | bit 25-4)                              |   |                     |                                    |
| Speed De  | termination                |                                    |                          |  | Speed D                             | eter                                | minatio                                | on  |                     |                                    |
| M <sub>S</sub> = (Exi   | bit 25-19)                 |                                    |                          |  | $D_s = 0.2$                         | 439 (E                              | xhibit 25                              | -19)  |                     |                                    |
| ľ   | (Exhibit 25-19)            |                                    |                          |  | S <sub>R</sub> = 49                 | .9 mpl                              | n (Exhibit                             | 25-19)  |                     |                                    |
|   | (Exhibit 25-19)            |                                    |                          |  | $S_0 = 57$                          | '.2 mpl                             | ı (Exhibit                             | 25-19)  |                     |                                    |
|   | (Exhibit 25-14)            |                                    |                          |  | S = 52                              | .3 mpl                              | n (Exhibit                             | 25-15)  |                     |                                    |
|   | ' University of Florida    |                                    |                          |  | HCS+ <sup>™</sup> \                 |                                     |  |   |                     |                                    |

| 0-:  | <b>f</b>                   | IVAIIII                    | S AND RAN                |  |   |                      | ···                    |  |                    |                                    |
|--|----------------------------|----------------------------|--------------------------|--|---|----------------------|------------------------|--|--------------------|------------------------------------|
|  | nformation                 |                            |                          | Site Infor   |   |                      |                        |  |                    |                                    |
| Analyst<br>Agency or Con<br>Date Performe<br>Analysis Time | d 9/0                      | HA<br>08/2011              | Ji<br>Ji                 | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | ]<br>]                                  | Exit 4 S<br>NYSD(    |                        |  |                    |                                    |
| Project Descrip  |                            |                            |                          | narjoio i oui  | •                                       | 20201                | o Bana                 |  |                    |                                    |
| Inputs   |                            |                            |                          |  |   |                      |                        |  |                    |                                    |
| Upstream Adj I   | Ramp                       | Terrain: Leve              | el .                     |  |   |                      |                        |  | Downstrea<br>Ramp  | m Adj                              |
| ☐ Yes  | On                         |                            |                          |  |   |                      |                        |  | · '                | ✓ On                               |
| ☑ No I   | Off                        |                            |                          |  |   |                      |                        |  | □ No               | ☐ Off                              |
| ир   | ft                         | S                          | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4                     | 0.0 mp               | h                      |  | dom                | 3100 ft                            |
| $V_u = V_u$  | veh/h                      |                            | Sketch (                 | show lanes, L <sub>A</sub>                                 | $L_{D'}V_{R'}V_{f}$                     |                      |                        |  | V <sub>D</sub> =   | 370 <b>veh</b> /                   |
| Conversi   | on to pc/h U               | nder Base                  | Conditions               |  | _                                       |                      |                        |  |                    |                                    |
| (pc/h)   | V<br>(Veh/hr)              | PHF                        | Terrain                  | %Truck   | %Rv                                     |                      | f <sub>HV</sub>        | f <sub>p</sub>                         | v = V/PHF          | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 5400                       | 0.92                       | Level                    | 2  | 0                                       | 0.                   | .990                   | 1.00                                   | 592                | 28                                 |
| Ramp   | 1010                       | 0.92                       | Level                    | 2  | 0                                       | 0                    | .990                   | 1.00                                   | 110                | )9                                 |
| UpStream   | 270                        | 0.00                       | 11                       |  | 0                                       | +                    | 005                    | 1.00                                   | 40                 |                                    |
| DownStream   | 370                        | 0.93<br>Merge Areas        | Level                    | 3  | 0                                       | 0                    | 985                    | 1.00<br>Diverge Areas                  | 40                 | 4                                  |
| Estimation of v <sub>12</sub>                              |                            |                            |                          |  | Estimati                                | ion c                |                        | Diverge Areas                          |                    |                                    |
| LStillatio   |                            |                            |                          |  | LStillati                               | 011                  |                        |  |                    |                                    |
|  |                            | $I_{\rm F}(P_{\rm FM})$    |                          |  |   |                      |                        | = V <sub>R</sub> + (V <sub>F</sub> - V |                    |                                    |
| L <sub>EQ</sub> =  |                            | juation 25-2 or            |                          |  | L <sub>EQ</sub> =                       |                      | (                      | Equation 25-8                          | 3 or 25-9)         |                                    |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)            |                            |                            |                          | P <sub>FD</sub> =  |   | 0                    | 561 using Ed           | μation (Exhi                           | bit 25-12)         |                                    |
| V <sub>12</sub> =  | pc/                        | h                          |                          |  | V <sub>12</sub> =                       |                      | 3                      | 811 <b>pc/h</b>                        |                    |                                    |
| $V_3$ or $V_{av34}$  | pc/                        | h (Equation 25             | 5-4 or 25-5)             |  | $V_3$ or $V_{av34}$                     |                      | 2                      | 117 pc/h (Equ                          | ation 25-15        | or 25-16                           |
| Is V <sub>3</sub> or V <sub>av34</sub>                     | > 2,700 pc/h? 🔲 Ŋ          | ′es □ No                   |                          |  | Is V <sub>3</sub> or V <sub>av3</sub>   | 34 > 2,7             | '00 pc/h?              | Tyes  ✓ No                             |                    |                                    |
| Is V <sub>3</sub> or V <sub>av34</sub>                     | > 1.5 * V <sub>12</sub> /2 | ′es □ No                   |                          |  | Is V <sub>3</sub> or V <sub>av3</sub>   | 3 <sub>4</sub> > 1.5 | 5 * V <sub>12</sub> /2 | Tyes  ✓ No                             |                    |                                    |
| If Yes,V <sub>12a</sub> =                                  | : <del>-</del>             | h (Equation 25             | 5-8)                     |  | If Yes,V <sub>12a</sub> =               |                      |                        | c/h (Equation                          | 25-18)             |                                    |
| Capacity   |                            |                            | ,                        |  | Capacity                                |                      |                        | · '                                    | ,                  |                                    |
|  | Actual                     | C                          | apacity                  | LOS F?   |   | ,                    | Actual                 | Ca                                     | pacity             | LOS F                              |
|  |                            |                            | <u> </u>                 |  | V <sub>F</sub>                          |                      | 5928                   | Exhibit 25-1                           |                    | No                                 |
| V <sub>FO</sub>  |                            | Exhibit 25-7               |                          |  | $V_{FO} = V_{F}$                        | - V-                 | 4819                   | Exhibit 25-1                           | _                  | No                                 |
| * FO   |                            | EXHIBIT 25-7               |                          |  |   | *R                   |                        | _                                      | <del>-</del>       |                                    |
| <u> </u>   |                            | <u> </u>                   |                          |  | V <sub>R</sub>                          |                      | 1109                   | Exhibit 25-3                           |                    | No                                 |
| Flow Ente  | ering Merge                |                            |                          | 1 1/1 1/2 2  | Flow En                                 | 1                    |                        | rge Influen                            |                    | 17. 1                              |
| 17   | Actual                     | _                          | Desirable                | Violation?   | \ | _                    | Actual                 | Max Desiral                            |                    | Violation                          |
| V <sub>R12</sub>   | <u></u>                    | Exhibit 25-7               |                          |  | V <sub>12</sub>                         |                      | 3811                   | Exhibit 25-14                          | 4400:All           | No No                              |
|  | Service Dete               | •                          |                          |  | +                                       |                      |                        | terminatio                             |                    | <del>-)</del>                      |
|  | 5 + 0.00734 v <sub>R</sub> | + 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |  |   |                      |                        | .0086 V <sub>12</sub> - 0.             | 009 L <sub>D</sub> |                                    |
|  | c/mi/ln)                   |                            |                          |  |   |                      | /mi/ln)                |  |                    |                                    |
| •  | xhibit 25-4)               |                            |                          |  |   | •                    | bit 25-4)              |  |                    |                                    |
| Speed De   | etermination               |                            |                          |  | Speed D                                 | Deter                | minati                 | on                                     |                    |                                    |
| M <sub>s</sub> = (Ex                                       | ibit 25-19)                |                            |                          |  | $D_S = 0.2$                             | 463 (E               | xhibit 25              | -19)                                   |                    |                                    |
| ľ  | (Exhibit 25-19)            |                            |                          |  | S <sub>R</sub> = 49                     | ).5 mpł              | ı (Exhibit             | 25-19)                                 |                    |                                    |
|  | (Exhibit 25-19)            |                            |                          |  |   | '.1 mph              | (Exhibit               | 25-19)                                 |                    |                                    |
|  | (Exhibit 25-14)            |                            |                          |  | 1.                                      | -                    | `<br>ı (Exhibit        |  |                    |                                    |
|  |                            |                            |                          |  | 1                                       | pi                   | ,                      | ,                                      |                    |                                    |

|   | RA   | MPS AND                       | RAMP JUNG                    | CHONS W                      | OKKSHE  | <u> </u>                 |                                    |                        |                                      |  |
|---|--|-------------------------------|------------------------------|------------------------------|---|--------------------------|------------------------------------|------------------------|--------------------------------------|--|
| General Infor   | mation                                     |                               |                              | Site Infor                   | mation  |                          |                                    |                        |                                      |  |
| Analyst   | SEB  |                               | Fr                           | eeway/Dir of Tra             | avel :  | Southbound I-8           | 37                                 |                        |                                      |  |
| gency or Company  | CHA  |                               | Ju                           | nction                       | 1   | Exit 4 SB On-R           | amp                                |                        |                                      |  |
| ate Performed   | 9/08/                                      | /2011                         | Ju                           | risdiction                   | I   | NYSDOT                   | •                                  |                        |                                      |  |
| nalysis Time Period   | AM   |                               | Ar                           | nalysis Year                 | :   | 2026 No-Build            |                                    |                        |                                      |  |
| Project Description   | Exit 4                                     |                               |                              |                              |   |                          |                                    |                        |                                      |  |
| nputs   |  |                               |                              |                              |   |                          |                                    |                        |                                      |  |
| lpstream Adj Ramp   |  | Terrain: Level                |                              |                              |   |                          |                                    | Downstre<br>Ramp       | eam Adj                              |  |
| Yes On  |  |                               |                              |                              |   |                          |                                    | ☐ Yes                  | □ On                                 |  |
| No ☐ Off  | :  |                               |                              |                              |   |                          |                                    | ✓ No                   | ☐ Off                                |  |
| <sub>up</sub> = 2035 1                                      | ft   |                               |                              |                              |   |                          |                                    | L <sub>down</sub> =    | ft                                   |  |
|   |  | S                             | $_{\rm F} = 56.0  {\rm mph}$ |                              | $S_{FR} = 4$  | 0.0 mph                  |                                    |                        | 1.71                                 |  |
| $v_{u} = 370 \text{ ve}$                                    | eh/h                                       |                               | Sketch (                     | show lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$   |                          |                                    | $V_D =$                | veh/h                                |  |
| Conversion to   | pc/h Un                                    | der Base C                    |                              |                              | 5 K I   |                          |                                    |                        |                                      |  |
| (pc/h)  | V  | PHF                           | Terrain                      | %Truck                       | %Rv   | f <sub>HV</sub>          | f <sub>p</sub>                     | v = V/PH               | F x f <sub>HV</sub> x f <sub>p</sub> |  |
| , ,   | (Veh/hr)                                   | 0.00                          |                              |                              |   |                          | <del>-</del>                       |                        | т                                    |  |
| reeway  | 4750                                       | 0.92                          | Level                        | 2                            | 0   | 0.990                    | 1.00                               | -                      | 5215                                 |  |
| Ramp  | 510  | 0.93                          | Level                        | 5                            | 0   | 0.976                    | 1.00                               |                        | 562                                  |  |
| JpStream  | 370  | 0.93                          | Level                        | 3                            | 0   | 0.985                    | 1.00                               |                        | 404                                  |  |
| DownStream  |  | <u> </u>                      |                              |                              |   |                          |                                    |                        |                                      |  |
|   |  | Merge Areas                   |                              |                              | <b>-</b>  |                          | Diverge Are                        | as                     |                                      |  |
| stimation of  | V <sub>12</sub>                            |                               |                              |                              | Estimati  | ion of v <sub>12</sub>   |                                    |                        |                                      |  |
|   | $V_{12} = V_{F}$                           | (P <sub>FM</sub> )            |                              |                              |   | ٧                        | = V <sub>R</sub> + (V <sub>F</sub> | · V_)P                 |                                      |  |
| EQ =  | (Equ                                       | ation 25-2 or                 | 25-3)                        |                              | _   | * 12                     |                                    |                        | 0)                                   |  |
|   |  |                               | on (Exhibit 25-5)            |                              | L <sub>EQ</sub> =   |                          | 25-8 or 25-                        |                        |                                      |  |
| FM =  |  |                               | on (Exhibit 25-5)            |                              | P <sub>FD</sub> =   |                          |                                    | ation (Exhibit         | 25-12)                               |  |
| 12 =  | 3143                                       | •                             | 05.4.05                      |                              | V <sub>12</sub> =   |                          | pc/h                               |                        |                                      |  |
| ' <sub>3</sub> or V <sub>av34</sub>                         | 2072<br>5)                                 | pc/h (Equatio                 | n 25-4 or 25-                |                              | $V_3$ or $V_{av34}$   |                          | pc/h (Equat                        | ion 25-15 or 2         | 5-16)                                |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,70                | ,  | o 🗵 No                        |                              |                              | Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |                          |                                    |                        |                                      |  |
| 0 4101  |  |                               |                              |                              | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                  |                          |                                    |                        |                                      |  |
| s $V_3$ or $V_{av34} > 1.5$ *                               |  |                               |                              |                              | If Yes, $V_{12a}$ = pc/h (Equation 25-18)                       |                          |                                    |                        |                                      |  |
| Yes,V <sub>12a</sub> =                                      |  | (Equation 25-                 | ·8)                          |                              | 120   |                          | pc/ii (Lqu                         | ation 25-10)           |                                      |  |
| Capacity Che  | cks  |                               |                              |                              | Capacity  | / Checks                 |                                    |                        |                                      |  |
|   | Actual                                     | Ca                            | pacity                       | LOS F?                       | <u> </u>  | Actu                     | al                                 | Capacity               | LOS F                                |  |
|   |  |                               |                              |                              | V <sub>F</sub>  |                          | Exhibit                            | 25-14                  |                                      |  |
| $V_{FO}$  | 5777                                       | Exhibit 25-7                  |                              | No                           | $V_{FO} = V_{F}$  | - V <sub>D</sub>         | Exhibit                            | 25-14                  |                                      |  |
| FO  | 0  |                               |                              |                              |   | K                        | Exhibit                            |                        | _                                    |  |
|   |  | <u></u>                       |                              |                              | V <sub>R</sub>  |                          |                                    |                        |                                      |  |
| low Entering  |  | 1                             |                              |                              | Flow En   | tering Div               |                                    |                        |                                      |  |
|   | Actual                                     |                               | )esirable                    | Violation?                   | <del> </del>  | Actual                   | 1                                  | esirable               | Violation?                           |  |
| V <sub>R12</sub>  | 3705                                       | Exhibit 25-7                  | 4600:All                     | No                           | V <sub>12</sub>   |                          | Exhibit 25-1                       |                        |                                      |  |
| evel of Serv  | ice Deterr                                 | nination (i                   | not F)                       |                              | Level of  | Service L                | <u>Determina</u>                   | tion (if n             | ot F)                                |  |
| $D_R = 5.475 +$   | 0.00734 v <sub>R</sub> + 0                 | 0.0078 V <sub>12</sub> - 0.00 | )627 L <sub>A</sub>          |                              |   | O <sub>R</sub> = 4.252 + | 0.0086 V <sub>12</sub>             | - 0.009 L <sub>D</sub> |                                      |  |
| D <sub>R</sub> = 28.5 (pc/mi/ln)                            |  |                               |                              |                              | $D_R = (p)$   | c/mi/ln)                 |                                    | _                      |                                      |  |
| OS = D (Exhib   |  |                               |                              |                              |   | xhibit 25-4)             |                                    |                        |                                      |  |
| Speed Detern  | *  |                               |                              |                              | `   | etermina                 | tion                               |                        |                                      |  |
|   |  |                               |                              |                              |   | xhibit 25-19)            |                                    |                        |                                      |  |
|   | $M_{\rm S} = 0.408 \text{ (Exibit 25-19)}$ |                               |                              |                              | 3   |                          | 10)                                |                        |                                      |  |
| 1 <sub>S</sub> = 0.408 (Exit                                |  |                               |                              |                              | S <sub>R</sub> = mph (Exhibit 25-19)                            |                          |                                    |                        |                                      |  |
| 1 <sub>S</sub> = 0.408 (Exit                                | Exhibit 25-19)                             |                               |                              |                              | ., .  |                          |                                    |                        |                                      |  |
| $I_{S} = 0.408 \text{ (Exit)}$ $I_{R} = 50.3 \text{ mph (}$ | Exhibit 25-19)<br>Exhibit 25-19)           |                               |                              |                              | ., .  | oh (Exhibit 25-          |                                    |                        |                                      |  |

|   | RAI   | MPS AND                | RAMP JUNG                   | <u>CTIONS W</u>  | ORKSHE  | EET              |                            |  |                                 |                     |  |  |
|---|---|------------------------|-----------------------------|--|---|------------------|----------------------------|--|---------------------------------|---------------------|--|--|
| General Info  | rmation   |                        |                             | Site Infor   | mation  |                  |                            |  |                                 |                     |  |  |
| Analyst   | SEB   |                        | Fre                         | eeway/Dir of Tr  | avel :  | Southb           | ound I-87                  |  |                                 |                     |  |  |
| Agency or Company   |   |                        |                             | nction   | İ   | Exit 5           | SB On-Ra                   | mp                                     |                                 |                     |  |  |
| Date Performed  | 9/08/   | 2011                   |                             | risdiction   |   | NYSD             |                            |  |                                 |                     |  |  |
| Analysis Time Perio   |   |                        | An                          | alysis Year  | -   | 2026 N           | lo-Build                   |  |                                 |                     |  |  |
| Project Description   | Exit 4  |                        |                             |  |   |                  |                            |  |                                 |                     |  |  |
| nputs   |   | IT a marker of a const | 1                           |  |   |                  |                            |  |                                 |                     |  |  |
| Jpstream Adj Ramp   |   | Terrain: Leve          |                             |  |   |                  |                            |  | Downstre<br>Ramp                | am Adj              |  |  |
| □ Yes □ O   | n   |                        |                             |  |   |                  |                            |  | ✓ Yes                           | ✓ On                |  |  |
| ™ No □ O  | ff  |                        |                             |  |   |                  |                            |  | □ No                            | ☐ Off               |  |  |
| - <sub>up</sub> = ft  |   |                        | L <sub>down</sub> = 2035 ft |  |   |                  |                            |  | 2035 ft                         |                     |  |  |
|   | h   | S                      | FF = 56.0 mph               |  | $S_{FR} = 4$                                    | 0.0 mp           | h                          |  | V <sub>D</sub> =                | 510 veh/h           |  |  |
| u .   |   |                        |                             | show lanes, L <sub>A</sub> ,                                 | $L_{A'}L_{D'}V_{R'}V_{f}$                       |                  |                            |  | I. p                            | 310 <b>Ve</b> 11/11 |  |  |
| Conversion  | 7   | der Base (             | Conditions                  | ı  | 1   | _                |                            |  |                                 |                     |  |  |
| (pc/h)  | V<br>(Veh/hr)   | PHF                    | Terrain                     | %Truck   | %Rv   |                  | f <sub>HV</sub>            | f <sub>p</sub>                         | v = V/PHF                       | $x f_{HV} x f_{p}$  |  |  |
| Freeway   | 4450  | 0.92                   | Level                       | 2  | 0   | 0.               | 990                        | 1.00                                   |                                 | 885                 |  |  |
| Ramp  | 370   | 0.93                   | Level                       | 3  | 0   | 0.               | 985                        | 1.00                                   |                                 | 404                 |  |  |
| UpStream  |   |                        |                             |  |   | -                |                            |  |                                 |                     |  |  |
| DownStream  | 510   | 0.93                   | Level                       | 5  | 0   | 0.               | 976                        | 1.00                                   |                                 | 562                 |  |  |
| Estimation o  |   | Merge Areas            |                             |  | Estimati  | ion c            | of v                       | Diverge Areas                          | <u> </u>                        |                     |  |  |
|   |   |                        |                             |  | LSuman  | OII C            | 12                         |  |                                 |                     |  |  |
|   | $V_{12} = V_F$  | (P <sub>FM</sub> )     |                             |  |   |                  | V <sub>12</sub> =          | : V <sub>R</sub> + (V <sub>F</sub> - \ | / <sub>R</sub> )P <sub>FD</sub> |                     |  |  |
| -EQ =   | (Equa   | ation 25-2 or          | 25-3)                       |  | L <sub>EQ</sub> =                               |                  |                            | (Equation 2                            |                                 | ))                  |  |  |
| P <sub>FM</sub> =   | 0.603   | using Equati           | on (Exhibit 25-5)           |  | P <sub>FD</sub> =                               |                  |                            | using Equa                             |                                 |                     |  |  |
| / <sub>12</sub> =   | 2944  | pc/h                   |                             |  |   |                  |                            | pc/h                                   | tion (Exhibit                   | 20 12)              |  |  |
|   |   |                        | on 25-4 or 25-              |  | V <sub>12</sub> =                               |                  |                            | •                                      | 05.4505                         | 1()                 |  |  |
| $V_3$ or $V_{av34}$   | 5)  | ( 1                    |                             |  | V <sub>3</sub> or V <sub>av34</sub>             |                  | "                          | pc/h (Equation                         |                                 | - 16)               |  |  |
| Is $V_3$ or $V_{av34} > 2.7$  | 00 pc/h?  | s 🗹 No                 |                             |  |   |                  |                            | ☐ Yes ☐ N                              |                                 |                     |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5  | * V <sub>12</sub> /2                                  | s 🗹 No                 |                             |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No  |                  |                            |  |                                 |                     |  |  |
| Yes,V <sub>12a</sub> =  |   | (Equation 25           | -8)                         |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |                  |                            |  |                                 |                     |  |  |
| Capacity Ch   | ecks  |                        |                             |  | Capacity  | y Ch             | ecks                       |  |                                 |                     |  |  |
| •   | Actual  | C                      | apacity                     | LOS F?   |   |                  | Actual                     |  | Capacity                        | LOS F               |  |  |
|   |   |                        |                             |  | V <sub>F</sub>                                  |                  |                            | Exhibit 25                             | 5-14                            |                     |  |  |
| $V_{FO}$  | 5289  | Exhibit 25-7           |                             | No   | $V_{FO} = V_{F}$                                | - V <sub>D</sub> |                            | Exhibit 25                             | 5-14                            |                     |  |  |
| го  |   |                        |                             |  | V <sub>R</sub>                                  |                  |                            | Exhibit 2                              |                                 | _                   |  |  |
| Flow Enterin  | Morgo In  | l l                    | roa                         |  | <del>,</del>                                    | torir            | na Div                     | erge Influe                            |                                 | <u></u>             |  |  |
| TOW LINEIIII  | Actual  | )r                     | Desirable                   | Violation?   | FIOW EII  |                  | Actual                     | Max De:                                |                                 | Violation?          |  |  |
| V <sub>R12</sub>  | 3348  | Exhibit 25-7           | 4600:AII                    | No   | V <sub>12</sub>                                 |                  |                            | Exhibit 25-14                          | 1                               |                     |  |  |
| Level of Serv   | vice Detern   | nination (i            | f not F)                    | !  |   | Ser              | vice D                     | eterminati                             | ion (if no                      | <i>t F</i> )        |  |  |
|   |   |                        |                             |  |   |                  |                            |  |                                 | (1)                 |  |  |
| $D_R = 5.475 + 0.00734 \text{ v}_R + 0.0078 \text{ V}_{12} - 0.00627 \text{ L}_A$ $D_R = 25.8 \text{ (pc/mi/ln)}$ |   |                        |                             | $D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ $D_R = (pc/mi/ln)$ |   |                  |                            |  |                                 |                     |  |  |
| K 4   | ibit 25-4)  |                        |                             |  | $D_R = (pc/mi/ln)$<br>LOS = (Exhibit 25-4)      |                  |                            |  |                                 |                     |  |  |
| Speed Deter   | •   |                        |                             |  | Speed D   |                  |                            | ion                                    |                                 |                     |  |  |
|   |   |                        |                             |  |   | xhibit 2         |                            | <del></del>                            |                                 |                     |  |  |
| M <sub>S</sub> = 0.360 (Exibit 25-19)   |   |                        |                             |  |   |                  |                            | ))                                     |                                 |                     |  |  |
| o .   | S <sub>R</sub> = 51.0 mph (Exhibit 25-19)             |                        |                             |  |   |                  |                            | S <sub>R</sub> = mph (Exhibit 25-19)   |                                 |                     |  |  |
| $S_R = 51.0 \text{ mph}$  |   |                        |                             |  | ., .  |                  | nihit 25 10                | ))                                     |                                 |                     |  |  |
| $S_{R} = 51.0 \text{ mph}$<br>$S_{0} = 50.8 \text{ mph}$  | (Exhibit 25-19)<br>(Exhibit 25-19)<br>(Exhibit 25-14) |                        |                             |  | $S_0 = m_F$                                     | ph (Exl          | nibit 25-19<br>nibit 25-15 | •                                      |                                 |                     |  |  |

|                                       |   |                  | FREEWA              | Y WEAV       | ING WOR  | KSHEE             | Τ               |  |              |  |
|---------------------------------------|---|------------------|---------------------|--------------|--|-------------------|-----------------|--|--------------|--|
| Genera                                | l Informat  | ion              |                     |              | Site Info  | rmation           |                 |  |              |  |
| Date Perfor                           | Agency/Company CHA Date Performed 9/08/2011 Analysis Time Period AM   |                  |                     |              | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location          | Exit 2<br>NYSE  | I-87 Northbound<br>Exit 2E on to 2W off<br>NYSDOT<br>2026 No-Build |              |  |
| Inputs                                |   |                  |                     |              | •  |                   |                 |  |              |  |
| Weaving nu<br>Weaving se<br>Terrain   | eeway free-flow speed, S <sub>FF</sub> (mi/h) 56 leaving number of lanes, N 4 leaving seg length, L (ft) 815 errain Lev |                  | IVVEAVIIIO IAIIO. K |              | , VR   | A<br>0.29<br>0.31 |                 |  |              |  |
| Conver                                | sions to p  | c/h Unde         | er Base C           | ondition     | 1 -  |                   |                 | 1  |              |  |
| (pc/h)                                | V   | PHF              | Truck %             | RV %         | E <sub>T</sub>   | E <sub>R</sub>    | f <sub>HV</sub> | fp   | V            |  |
| $V_{o1}$                              | 2350  | 0.92             | 2                   | 0            | 1.5  | 1.2               | 0.990           | 1.00   | 2579         |  |
| $V_{o2}$                              | 0   | 0.92             | 2                   | 0            | 1.5  | 1.2               | 0.990           | 1.00   | 0            |  |
| $V_{w1}$                              | 680   | 0.92             | 2                   | 0            | 1.5  | 1.2               | 0.990           | 1.00   | 746          |  |
| $V_{w2}$                              | 300   | 0.92             | 2                   | 0            | 1.5  | 1.2               | 0.990           | 1.00   | 329          |  |
| $V_{_{\mathrm{W}}}$                   | 1   |                  | •                   | 1075         | $V_{nw}$   |                   | •               | ,  | 2579         |  |
| V                                     | 1   |                  |                     |              |  | l                 |                 |  | 3654         |  |
| Weavin                                | g and No  | n-Weavin         | g Speeds            | 3            |  |                   |                 |  |              |  |
|                                       |   |                  | Unconstr            |              |  |                   |                 | trained  |              |  |
| - /F.,h;h;h;                          | 4 ()  | Weaving          | (i = w)             | Non-Wea      | ving (i = nw)  |                   | ng (i = w)      | <del> </del>   | ving ( = nw) |  |
| a (Exhibit 24<br>b (Exhibit 24        |   | <del> </del>     |                     | <del> </del> |  | 0.                |                 |  | 020          |  |
| c (Exhibit 24                         |   | †                |                     |              |  |                   | 97              |  | 30           |  |
| d (Exhibit 2                          |   | 1                |                     |              |  |                   | 80              | <del>}</del>   | 75           |  |
| Weaving intens                        |   |                  |                     |              |  | 2.                | 15              | 0.   | 26           |  |
| Weaving and no<br>speeds, Si (mi/h    |   |                  |                     |              |  | 29                | .58             | 51   | .51          |  |
| Maximum n                             | anes required<br>umber of lanes   | s, Nw (max)      | ·                   |              | 1.42<br>1.40   | _                 |                 |  |              |  |
|                                       | If Nw < Nw  | <u> </u>         |                     |              |  |                   | v (max) const   | rained operati   | ion          |  |
| Weavin                                | g Segmei  | nt Speed,        |                     |              | f Service,   | and Cap           | acity           |  |              |  |
|                                       | gment speed,  |                  |                     | 42.29        |  |                   |                 |  |              |  |
| Weaving segment density, D (pc/mi/ln) |   |                  |                     | 21.60<br>C   |  |                   |                 |  |              |  |
|                                       | Level of service, LOS<br>Capacity of base condition, c <sub>h</sub> (pc/h)  |                  |                     |              |  |                   |                 |  |              |  |
|                                       | a 15-minute fl  |                  | 2/b)                | 6221<br>6159 |  |                   |                 |  |              |  |
|                                       | a full-hour vol   |                  |                     | 1            |  |                   |                 |  |              |  |
| Notes                                 | a iuli-iluui VUI  | unic, ch (veil/i | '/                  | 5666         |  |                   |                 |  |              |  |
| hanre2                                |   |                  |                     |              |  |                   |                 |  |              |  |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|   |   |                            | FREEWA   | Y WEAV   | ING WOR  | KSHEE          | Τ  |                |              |
|---|---|----------------------------|----------|--|--|----------------|--|----------------|--------------|
| General   | Informat  | ion                        |          |  | Site Info  | rmation        |  |                |              |
| Date Perforn<br>Analysis Tim                                | Agency/Company CHA Date Performed 9/08/2011 Analysis Time Period AM   |                            |          |  | Freeway/Dir of Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | I-87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2026 No-Build |                |              |
| Inputs  |   |                            |          |  |  |                |  |                |              |
| Weaving nur<br>Weaving seg<br>Terrain                       | reeway free-flow speed, S <sub>FF</sub> (mi/h) 56 Yeaving number of lanes, N 4 Yeaving seg length, L (ft) 810 Perrain Lev |                            | el       | Weaving type<br>Volume ratio, VR<br>Weaving ratio, R |  |                | A<br>0.23<br>0.32  |                |              |
| Convers   | ions to p   | oc/h Unde                  | r Base C | ondition   |  |                |  | ,              | _            |
| (pc/h)  | V   | PHF                        | Truck %  | RV %   | E <sub>T</sub>   | E <sub>R</sub> | f <sub>HV</sub>  | fp             | V            |
| $V_{o1}$  | 3750  | 0.92                       | 2        | 0  | 1.5  | 1.2            | 0.990  | 1.00           | 4116         |
| $V_{o2}$  | 0   | 0.92                       | 2        | 0  | 1.5  | 1.2            | 0.990  | 1.00           | 0            |
| V <sub>w1</sub>   | 750   | 0.92                       | 2        | 0  | 1.5  | 1.2            | 0.990  | 1.00           | 823          |
| $V_{w2}$  | 360   | 0.92                       | 2        | 0  | 1.5  | 1.2            | 0.990  | 1.00           | 395          |
| V <sub>w</sub>  |   |                            |          | 1218   | V <sub>nw</sub>  |                |  |                | 4116         |
| V   | 1   |                            |          |  | 11W  |                |  |                | 5334         |
| Weaving   | and No  | n-Weavin                   | g Speeds | <u> </u>   |  |                |  |                |              |
|   |   |                            | Unconstr |  |  |                |  | trained        |              |
| /F 1 11 11 0 4  | ()  | Weaving                    | <u> </u> |  | ving (i = nw)  | Weavir         | ng (i = w)   | Non-Wea        | ving ( = nw) |
| a (Exhibit 24<br>b (Exhibit 24                              |   | 0.15<br>2.20               |          | 0.0035<br>4.00                                       |  |                |  |                |              |
| c (Exhibit 24   |   | 0.97                       |          |  | .30  |                |  |                |              |
| d (Exhibit 24   |   | 0.80                       |          | 1  | .75  |                |  |                |              |
| Weaving intensit  |   | 1.19                       |          | 0.   | .61  |                |  |                |              |
| Weaving and nor<br>speeds, Si (mi/h)                        |   | 35.9                       | 7        | 43   | 3.64   |                |  |                |              |
| Number of la<br>Maximum nu                                  | nes required<br>Imber of lanes  |                            |          |  | 1.27<br>1.40   |                | , , ,  |                |              |
|   |   | (max) unconst              |          |  |  |                | v (max) consti   | rained operati | on           |
| Weaving   | J Segmei  | S (mi/h)                   | Density, | 41.61  | f Service,   | and Cap        | acity  |                |              |
|   |   |                            |          | 32.04  |  |                |  |                |              |
| Weaving segment density, D (pc/mi/ln) Level of service, LOS |   |                            |          | D  |  |                |  |                |              |
|   | Capacity of base condition, c <sub>h</sub> (pc/h)   |                            |          |  |  |                |  |                |              |
|   |   | ow rate, c (veh            | /h)      | 6578<br>6513   |  |                |  |                |              |
|   |   | ume, c <sub>h</sub> (veh/h |          | 5992   |  |                |  |                |              |
| Notes   |   | 11.                        | -        | <u> </u>   |  |                |  |                |              |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

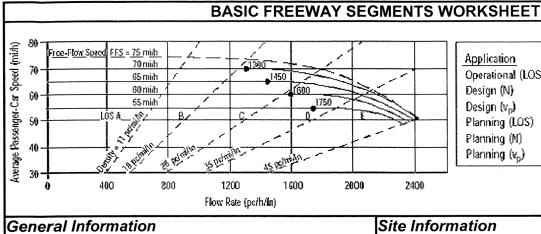
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such



| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | V <sub>D</sub> , S, D |

|   | ,                           |               |  |             |                                |
|---|-----------------------------|---------------|--|-------------|--------------------------------|
| General Information                     |                             |               | Site Information                             |             |                                |
| Analyst                                 | SEB                         |               | Highway/Direction of Travel                  | Northbou    | und I-87                       |
| Agency or Company                       | CHA                         |               | From/To                                      | Exit 2 to   |                                |
| Date Performed                          | 6/22/2011                   |               | Jurisdiction                                 | NYSDO       |                                |
| Analysis Time Period                    | AM                          |               | Analysis Year                                | 2036 No     | -Build                         |
| Project Description Exit 4              |                             |               |  |             |                                |
|   |                             |               | Des.(N)                                      | □ Pla       | nning Data                     |
| Flow Inputs                             |                             |               |  |             |                                |
| Volume, V                               | 3000                        | veh/h         | Peak-Hour Factor, PHF                        | 0.92        |                                |
| AADT                                    |                             | veh/day       | %Trucks and Buses, P <sub>T</sub>            | 2           |                                |
| Peak-Hr Prop. of AADT, K                |                             |               | %RVs, P <sub>R</sub>                         | 0           |                                |
| Peak-Hr Direction Prop, D               |                             |               | General Terrain:                             | Level       |                                |
| DDHV = AADT x K x D                     | 4.00                        | veh/h         | Grade % Length                               | mi          |                                |
| Driver type adjustment                  | 1.00                        |               | Up/Down %                                    |             |                                |
| Calculate Flow Adjustr                  |                             |               | _  | 4.0         |                                |
| $f_p$                                   | 1.00                        |               | E <sub>R</sub>                               | 1.2         |                                |
| E <sub>T</sub>                          | 1.5                         |               | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990       |                                |
| Speed Inputs                            |                             |               | Calc Speed Adj and FF                        | S           |                                |
| Lane Width                              | 12.0                        | ft            | f <sub>LW</sub>                              |             | mi/h                           |
| Rt-Shoulder Lat. Clearance              | 6.0                         | ft            | f <sub>LC</sub>                              |             | mi/h                           |
| Interchange Density                     | 0.50                        | l/mi          | <b>\$</b>                                    |             |                                |
| Number of Lanes, N                      | 3                           |               | f <sub>ID</sub>                              |             | mi/h                           |
| FFS (measured)                          | 56.0                        | mi/h          | f <sub>N</sub>                               |             | mi/h                           |
| Base free-flow Speed, BFFS              |                             | mi/h          | FFS  | 56.0        | mi/h                           |
| LOS and Performance                     | Measures                    | <u> </u>      | Design (N)                                   |             |                                |
|   |                             |               | Design (N)                                   |             |                                |
| Operational (LOS)                       |                             |               | Design LOS                                   |             |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$ | x f <sub>HV</sub> x<br>1098 | pc/h/ln       | $v_p = (V \text{ or DDHV}) / (PHF \times N)$ | κ f x       |                                |
| f <sub>p</sub> )                        | ,,,,,                       | ролли         | · ·  | · ·HV       | pc/h                           |
| S                                       | 56.0                        | mi/h          | f <sub>p</sub> )                             |             | : //-                          |
| D = v <sub>p</sub> / S                  | 19.6                        | pc/mi/ln      | S  |             | mi/h                           |
| Los                                     | С                           |               | $D = v_p / S$                                |             | pc/mi/ln                       |
|   |                             |               | Required Number of Lanes, N                  | Į.          |                                |
| Glossary                                |                             |               | Factor Location                              |             |                                |
| N - Number of lanes                     | S - Speed                   |               | E <sub>R</sub> - Exhibits23-8, 23-10         |             | f <sub>LW</sub> - Exhibit 23-4 |
| V - Hourly volume                       | D - Density                 |               | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-   | 11          | f <sub>LC</sub> - Exhibit 23-5 |
| v <sub>p</sub> - Flow rate              | FFS - Free-flov             | v speed       |  |             |                                |
| LOS - Level of service                  | BFFS - Base fr              | ee-flow speed | f <sub>p</sub> - Page 23-12                  | 2 22 2      | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho            | our volume.                 |               | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | -2, 23-3    | f <sub>ID</sub> - Exhibit 23-7 |
|   |                             |               |  | <del></del> |                                |

## **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (milh) Frce-Flow Speed FFS = 75 mith 70 mith 70 65 mids 60 miih 60 55 mish 30 200 1600 2000 400 1200 2400 Flow Rate (pc/h/lin)

| Application                | <u>Input</u>             | Output         |
|----------------------------|--------------------------|----------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D      |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D        |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D       |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D      |
| Planning (M)               | FFS, LOS, AADT           | N, S, D        |
| Planning (v <sub>o</sub> ) | FFS, LOS, N              | $v_{n}$ , S, D |

| General Information                              |   |              | Site Information                             |                |                                |
|--|---|--------------|--|----------------|--------------------------------|
| Analyst  | SEB                                     |              | Highway/Direction of Travel                  | Southbo        | ound I-87                      |
| Agency or Company                                | CHA                                     |              | From/To                                      | Exit 4 to      | Exit 2                         |
| Date Performed                                   | 6/22/2011                               |              | Jurisdiction                                 | NYSDO          | T                              |
| Analysis Time Period                             | AM                                      |              | Analysis Year                                | 2036 No        | o-Build                        |
| Project Description Exit 4                       |   |              |  |                |                                |
| Oper.(LOS)                                       | , |              | Des.(N)                                      | Pla            | nning Data                     |
| Flow Inputs                                      |   |              | **************************************       |                |                                |
| Volume, V  | 5300                                    | veh/h        | Peak-Hour Factor, PHF                        | 0.92           |                                |
| AADT   |   | veh/day      | %Trucks and Buses, P <sub>T</sub>            | 2              |                                |
| Peak-Hr Prop. of AADT, K                         |   |              | %RVs, P <sub>R</sub>                         | 0              |                                |
| Peak-Hr Direction Prop, D                        |   |              | General Terrain:                             | Level          |                                |
| DDHV = AADT x K x D                              | 1.00                                    | veh/h        | Grade % Length                               | mi             |                                |
| Driver type adjustment<br>Calculate Flow Adjustr |   |              | Up/Down %                                    |                |                                |
|  | 1.00                                    |              |  | 1.2            |                                |
| f <sub>p</sub>                                   |   |              | E <sub>R</sub>                               |                |                                |
| E <sub>T</sub>                                   | 1.5                                     |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990          |                                |
| Speed Inputs                                     |   |              | Calc Speed Adj and FF                        | <u>S</u>       |                                |
| ane Width  | 12.0                                    | ft           | $f_{LW}$                                     |                | mi/h                           |
| Rt-Shoulder Lat. Clearance                       | 6.0                                     | ft           | f <sub>LC</sub>                              |                | mi/h                           |
| Interchange Density                              | 0.50                                    | I/mi         | 1  |                |                                |
| Number of Lanes, N                               | 3                                       |              | f <sub>ID</sub>                              |                | mi/h                           |
| FFS (measured)                                   | 56.0                                    | mi/h         | f <sub>N</sub>                               |                | mi/h                           |
| Base free-flow Speed, BFFS                       |   | mi/h         | FFS  | 56.0           | mi/h                           |
| LOS and Performance                              | Measures                                |              | Design (N)                                   |                |                                |
|  |   |              | Design (N)                                   |                |                                |
| Operational (LOS)                                |   |              | Design LOS                                   |                |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$          | x f <sub>HV</sub> x<br>1939             | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF x N)$      | rf v           |                                |
| f <sub>p</sub> )                                 | 1939                                    | ролли        | l <sup>r</sup>                               | ` 'HV <b>^</b> | pc/h                           |
| S  | 55.4                                    | mi/h         | $f_p$ )                                      |                |                                |
| $D = v_p / S$                                    | 35.0                                    | pc/mi/ln     | S  |                | mi/h                           |
| LOS  | D                                       | ,            | $D = v_p / S$                                |                | pc/mi/ln                       |
|  |   |              | Required Number of Lanes, N                  | <u> </u>       |                                |
| Glossary   |   |              | Factor Location                              |                |                                |
| N - Number of lanes                              | S - Speed                               |              | E Evhibita 22 9 22 40                        |                | f = Evbibit 00 4               |
| V - Hourly volume                                | D - Density                             |              | E <sub>R</sub> - Exhibits23-8, 23-10         | 4.4            | f <sub>LW</sub> - Exhibit 23-4 |
| v <sub>n</sub> - Flow rate                       | FFS - Free-flov                         | v speed      | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-7  | 11             | f <sub>LC</sub> - Exhibit 23-5 |
| LOS - Level of service                           | BFFS - Base fr                          |              | f <sub>p</sub> - Page 23-12                  |                | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho                     |   | oo non opeea | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | -2, 23-3       | f <sub>ID</sub> - Exhibit 23-7 |
| טריער - Directional design no                    | our volunie                             |              |  |                |                                |

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### **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (milh) Free-Flow Speed FFS = 75 midt Application Output Input 70 mida 70 Operational (LOS) 65 milh FFS, N, v<sub>D</sub> LOS, S, D 60 midu Design (N) FFS, LOS, V, N, S, D 60 55 mich Design (v<sub>o</sub>) FFS, LOS, N Vp. S. D 50 Planning (LOS) FFS, N, AADT LOS, S, D Planning (M) FFS, LOS, AADT N, S, D Planning (v<sub>p</sub>) FFS, LOS, N v<sub>p</sub>. S. D 30 400 800 1200 1600 2000 2400 Flow Rate (pc/h/lin) General Information Site Information Highway/Direction of Travel Analyst SEB Northbound I-87 Agency or Company CHA From/To Exit 4 off to Exit 4 on Date Performed 9/09/2011 Jurisdiction NYSDOT Analysis Time Period Analysis Year 2036 No-Build AM Project Description Exit 4 □ Des.(N) Oper.(LOS) Planning Data Flow Inputs Volume, V 2200 veh/h Peak-Hour Factor, PHF 0.92 **AADT** veh/day %Trucks and Buses, P<sub>⊤</sub> 2 $%RVs, P_R$ Peak-Hr Prop. of AADT, K 0 Peak-Hr Direction Prop. D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments ER 1.00 1.2 $E_{T}$ 1.5 0.990 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Speed Inputs Calc Speed Adj and FFS Lane Width 12.0 ft $f_{LW}$ mi/h Rt-Shoulder Lat. Clearance ft 6.0 $f_{LC}$ mi/h 0.50 Interchange Density I/mi $f_{ID}$ mi/h 3 Number of Lanes, N $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 805 pc/h/ln $f_p)$ pc/h 56.0 mi/h mi/h $D = v_n / S$ 14.4 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS В Required Number of Lanes, N Glossary **Factor Location** N - Number of lanes S - Speed E<sub>R</sub> - Exhibits23-8, 23-10 f<sub>IW</sub> - Exhibit 23-4 - Hourly volume D - Density $E_{T}$ - Exhibits 23-8, 23-10, 23-11 f<sub>IC</sub> - Exhibit 23-5 - Flow rate FFS - Free-flow speed f<sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, v<sub>n</sub> - Exhibits 23-2, 23-3 f<sub>ID</sub> - Exhibit 23-7 DDHV - Directional design hour volume

### **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mith) Free-Flow Speed FFS = 75 minh 70 miih 70 65 min 60 midn 6Ò 55 miih 50 30 400 0081200 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>o</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> , S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | $v_{nr}$ S, D         |

|  | rava nos (benum             | ·*       |  |           |                                |
|--|-----------------------------|----------|--|-----------|--------------------------------|
| General Information                            |                             |          | Site Information                             |           |                                |
| Analyst  | SEB                         |          | Highway/Direction of Travel                  | Southbo   | ound I-87                      |
| Agency or Company                              | CHA                         |          | From/To                                      | Exit 5 or | n to Exit 4 on                 |
| Date Performed                                 | 12/09/2011                  |          | Jurisdiction                                 | NYSDO     | T                              |
| Analysis Time Period                           | AM                          |          | Analysis Year                                | 2036 No   | p-Build                        |
| Project Description Exit 4                     |                             |          |  |           |                                |
| ⊠ Oper.(LOS)                                   |                             |          | Des.(N)                                      | □ Pla     | nning Data                     |
| Flow Inputs                                    |                             |          |  |           |                                |
| Volume, V                                      | 4800                        | veh/h    | Peak-Hour Factor, PHF                        | 0.92      |                                |
| AADT   |                             | veh/day  | %Trucks and Buses, $P_T$                     | 2         |                                |
| Peak-Hr Prop. of AADT, K                       |                             |          | %RVs, P <sub>R</sub>                         | 0         |                                |
| Peak-Hr Direction Prop, D                      |                             |          | General Terrain:                             | Level     |                                |
| DDHV = AADT x K x D                            | 1.00                        | veh/h    | Grade % Length<br>Up/Down %                  | mi        |                                |
| Driver type adjustment  Calculate Flow Adjustr |                             |          | Ор/Домп %                                    |           |                                |
|  | 1.00                        |          |  | 1.2       |                                |
| f <sub>p</sub>                                 |                             |          | E <sub>R</sub>                               |           |                                |
| E <sub>T</sub>                                 | 1.5                         |          | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990     |                                |
| Speed Inputs                                   |                             |          | Calc Speed Adj and FF                        | S         |                                |
| Lane Width                                     | 12.0                        | ft       | $f_LW$                                       |           | mi/h                           |
| Rt-Shoulder Lat. Clearance                     | 6.0                         | ft       | f <sub>LC</sub>                              |           | mi/h                           |
| Interchange Density                            | 0.50                        | I/mi     |  |           |                                |
| Number of Lanes, N                             | 3                           |          | f <sub>ID</sub>                              |           | mi/h                           |
| FFS (measured)                                 | 56.0                        | mi/h     | f <sub>N</sub>                               |           | mi/h                           |
| Base free-flow Speed, BFFS                     |                             | mi/h     | FFS  | 56.0      | mi/h                           |
| LOS and Performance                            | Measures                    |          | Design (N)                                   |           |                                |
|  |                             |          | Design (N)                                   |           |                                |
| Operational (LOS)                              |                             |          | Design LOS                                   |           |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$        | x f <sub>HV</sub> x<br>1757 | no/h/ln  |  | v f v     |                                |
| $f_p$ )  | 1757                        | pc/h/ln  | $v_p = (V \text{ or DDHV}) / (PHF \times N)$ | ' HV X    | pc/h                           |
| S  | 56.0                        | mi/h     | f <sub>p</sub> )                             |           |                                |
| D = v <sub>p</sub> / S                         | 31.4                        | pc/mi/ln | S  |           | mi/h                           |
| LOS  | D                           | ,        | $D = v_p / S$                                |           | pc/mi/ln                       |
|  |                             |          | Required Number of Lanes, N                  | 1         |                                |
| Glossary                                       |                             |          | Factor Location                              |           |                                |
| N - Number of lanes                            | S - Speed                   |          | E Evhibite22 9 22 10                         |           | f Evhibit 22.4                 |
| V - Hourly volume                              | D - Density                 |          | E <sub>R</sub> - Exhibits 23-8, 23-10        | 4.4       | f <sub>LW</sub> - Exhibit 23-4 |
| v <sub>o</sub> - Flow rate                     | FFS - Free-flow             | v speed  | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-   | 17        | f <sub>LC</sub> - Exhibit 23-5 |
| LOS - Level of service                         | BFFS - Base fr              |          | f <sub>p</sub> - Page 23-12                  |           | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho                   |                             | opood    | LOS, S, FFS, v <sub>p</sub> - Exhibits 23    | -2, 23-3  | f <sub>ID</sub> - Exhibit 23-7 |
| DD11V - Directional design no                  | ou volume                   |          |  |           |                                |

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### **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mi/h) Free-Flow Spred FFS = 75 minh 70 mish 70 65 midt 60 midt 60 55 mish 50 30 800 2000 400 1200 1600 2400 0 Flow Rate (pc/h/lin)

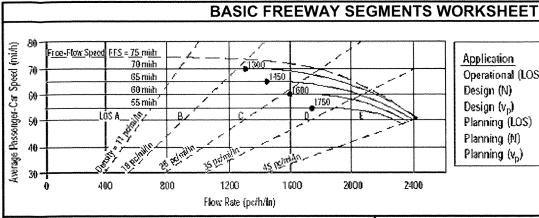
| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (N)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> . S, D |

| General Information                            |                          |                                       | Site Information                               |           |                                |  |
|--|--------------------------|---------------------------------------|--|-----------|--------------------------------|--|
| Analyst  | SEB                      |                                       | Highway/Direction of Travel                    | Northbou  | und I-87                       |  |
| Agency or Company                              | CHA                      |                                       | From/To  | Exit 4 to | Exit 5                         |  |
| Date Performed                                 | 6/22/2011                |                                       | Jurisdiction                                   | NYSDO     | Τ                              |  |
| Analysis Time Period                           | AM                       | `                                     | Analysis Year                                  | 2036 No   | -Build                         |  |
| Project Description Exit 4                     |                          |                                       |  |           |                                |  |
| ☑ Oper.(LOS)                                   | )                        |                                       | Des.(N)  | Pla       | nning Data                     |  |
| Flow Inputs                                    |                          |                                       |  |           |                                |  |
| Volume, V                                      | 2800                     | veh/h                                 | Peak-Hour Factor, PHF                          | 0.92      |                                |  |
| AADT   |                          | veh/day                               | %Trucks and Buses, $P_T$                       | 2         |                                |  |
| Peak-Hr Prop. of AADT, K                       |                          |                                       | %RVs, P <sub>R</sub>                           | 0         |                                |  |
| Peak-Hr Direction Prop, D                      |                          |                                       | General Terrain:                               | Level     |                                |  |
| DDHV = AADT x K x D                            | 4.00                     | veh/h                                 | Grade % Length                                 | mi        |                                |  |
| Driver type adjustment  Calculate Flow Adjusti | 1.00                     |                                       | Up/Down %                                      |           |                                |  |
|  |                          | <del></del>                           |  |           |                                |  |
| f <sub>p</sub>                                 | 1.00                     |                                       | $E_R$  | 1.2       |                                |  |
| E <sub>T</sub>                                 | 1.5                      |                                       | $f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990     |                                |  |
| Speed Inputs                                   |                          |                                       | Calc Speed Adj and FF                          | S         |                                |  |
| Lane Width                                     | 12.0                     | ft                                    | f <sub>LW</sub>                                |           | mi/h                           |  |
| Rt-Shoulder Lat. Clearance                     | 6.0                      | ft                                    | f <sub>LC</sub>                                |           | mi/h                           |  |
| Interchange Density                            | 0.50                     | l/mi                                  |  |           |                                |  |
| Number of Lanes, N                             | 3                        |                                       | f <sub>ID</sub>                                |           | mi/h                           |  |
| FFS (measured)                                 | 56.0                     | mi/h                                  | f <sub>N</sub>                                 |           | mi/h                           |  |
| Base free-flow Speed, BFFS                     |                          | mi/h                                  | FFS  | 56.0      | mi/h                           |  |
| LOS and Performance                            | Measures                 |                                       | Design (N)                                     |           |                                |  |
|  |                          |                                       | Design (N)                                     |           |                                |  |
| Operational (LOS)                              |                          |                                       | Design LOS                                     |           |                                |  |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$        | x f <sub>HV</sub> x 1025 | pc/h/ln                               | $v_p = (V \text{ or DDHV}) / (PHF x N)$        | v f v     |                                |  |
| f <sub>p</sub> )                               | 1025                     | ролин                                 |  | ' 'HV ^   | pc/h                           |  |
| S  | 56.0                     | mi/h                                  | f <sub>p</sub> )                               |           |                                |  |
| D = v <sub>p</sub> / S                         | 18.3                     | pc/mi/ln                              | S  |           | mi/h                           |  |
| LOS  | С                        | <b>P C</b>                            | $D = v_p / S$                                  |           | pc/mi/ln                       |  |
|  |                          |                                       | Required Number of Lanes, N                    | 1         |                                |  |
| Glossary                                       |                          |                                       | Factor Location                                |           |                                |  |
| N - Number of lanes                            | S - Speed                |                                       | E Evhibito 22 0 22 10                          |           | f Eubibit 00 4                 |  |
| V - Hourly volume                              | D - Density              |                                       | E <sub>R</sub> - Exhibits23-8, 23-10           |           | f <sub>LW</sub> - Exhibit 23-4 |  |
| v Flow rate                                    | FFS - Free-flov          | v speed                               | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-     | 11        | f <sub>LC</sub> - Exhibit 23-5 |  |
| LOS - Level of service                         | BFFS - Base fr           |                                       | f <sub>p</sub> - Page 23-12                    |           |                                |  |
| DDHV - Directional design ho                   |                          | oo non opood                          | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-     | -2, 23-3  | f <sub>ID</sub> - Exhibit 23-7 |  |
| DDITY - Directional design no                  | Jui voluitie             | · · · · · · · · · · · · · · · · · · · | <u> </u>                                       |           |                                |  |

## **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (milh) Free-Flow Speed FFS = 75 mith 70 mith 70 65 mish 60 miih 60 50 40 30 400 800 1200 1600 2000 2400 0 Flow Rate (pc/h/lin)

| Application                | Input                    | Output               |
|----------------------------|--------------------------|----------------------|
| Operational (LOS)          | FFS, N, vp               | LOS, S, D            |
| Design (N)                 | FFS, LOS, V <sub>B</sub> | N, S, D              |
| Design (v <sub>D</sub> )   | FFS, LOS, N              | Vp. S. D             |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D            |
| Planning (M)               | FFS, LOS, AADT           | N, S, D              |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>or</sub> S, D |

| General Information                            |                             |               | Site Information                               |           |   |
|--|-----------------------------|---------------|--|-----------|---|
| Analyst  | SEB                         |               | Highway/Direction of Travel                    | Southbo   | ound I-87                               |
| Agency or Company                              | CHA                         |               | From/To  | Exit 5 to | Exit 4                                  |
| Date Performed                                 | 6/22/2011                   |               | Jurisdiction                                   | NYSDO     | T                                       |
| Analysis Time Period                           | AM                          |               | Analysis Year                                  | 2036 No   | o-Build                                 |
| Project Description Exit 4                     |                             |               |  |           |   |
| ✓ Oper.(LOS)                                   |                             |               | Des.(N)  | □ Pla     | nning Data                              |
| Flow Inputs                                    |                             |               |  |           |   |
| Volume, V                                      | 4550                        | veh/h         | Peak-Hour Factor, PHF                          | 0.92      |   |
| AADT   |                             | veh/day       | %Trucks and Buses, $P_T$                       | 2         |   |
| Peak-Hr Prop. of AADT, K                       |                             |               | %RVs, P <sub>R</sub>                           | 0         |   |
| Peak-Hr Direction Prop, D                      |                             |               | General Terrain:                               | Level     |   |
| DDHV = AADT x K x D                            | 1.00                        | veh/h         | Grade % Length                                 | mi        |   |
| Driver type adjustment  Calculate Flow Adjustr | 1.00                        |               | Up/Down %                                      |           |   |
|  |                             |               |  |           |   |
| f <sub>p</sub>                                 | 1.00                        |               | $E_R$  | 1.2       |   |
| E <sub>T</sub>                                 | 1.5                         |               | $f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990     |   |
| Speed Inputs                                   |                             |               | Calc Speed Adj and FF                          | S         |   |
| Lane Width                                     | 12.0                        | ft            | $f_{LW}$                                       |           | mi/h                                    |
| Rt-Shoulder Lat. Clearance                     | 6.0                         | ft            | f <sub>LC</sub>                                |           | mi/h                                    |
| Interchange Density                            | 0.50                        | l/mi          | 1  |           |   |
| Number of Lanes, N                             | 3                           |               | f <sub>ID</sub>                                |           | mi/h                                    |
| FFS (measured)                                 | 56.0                        | mi/h          | $f_N$  |           | mi/h                                    |
| Base free-flow Speed, BFFS                     |                             | mi/h          | FFS  | 56.0      | mi/h                                    |
| LOS and Performance                            | Measures                    |               | Design (N)                                     |           |   |
|  |                             |               | Design (N)                                     |           | *************************************** |
| Operational (LOS)                              |                             |               | Design LOS                                     |           |   |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$        | x f <sub>HV</sub> x<br>1665 | pc/h/ln       | $v_p = (V \text{ or DDHV}) / (PHF \times N)$   | /f v      |   |
| f <sub>p</sub> )                               | 7000                        | родили        |  | , ,HA ,   | pc/h                                    |
| S  | 56.0                        | mi/h          | f <sub>p</sub> )                               |           | .,,                                     |
| D = v <sub>p</sub> / S                         | 29.7                        | pc/mi/ln      | S  |           | mi/h                                    |
| Los  | D                           |               | $D = v_p / S$                                  |           | pc/mi/ln                                |
|  |                             |               | Required Number of Lanes, N                    | l         |   |
| Glossary                                       |                             |               | Factor Location                                |           |   |
| N - Number of lanes                            | S - Speed                   |               | E <sub>R</sub> - Exhibits23-8, 23-10           |           | f <sub>LW</sub> - Exhibit 23-4          |
| V - Hourly volume                              | D - Density                 |               | <b> </b> '`                                    | 1 1       |   |
| v <sub>n</sub> - Flow rate                     | FFS - Free-flow             | v speed       | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-     | ł I       | f <sub>LC</sub> - Exhibit 23-5          |
| LOS - Level of service                         | BFFS - Base fr              | ee-flow speed | f <sub>p</sub> - Page 23-12                    |           | f <sub>N</sub> - Exhibit 23-6           |
| DDHV - Directional design ho                   |                             | •             | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-     | -2, 23-3  | f <sub>ID</sub> - Exhibit 23-7          |
|  |                             |               |  |           |   |



| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> . S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>o</sub> , S, D |

|  | ,                       |   |  |           |                                |  |  |  |  |
|--|-------------------------|---|--|-----------|--------------------------------|--|--|--|--|
| General Information                          |                         |   | Site Information                                       |           |                                |  |  |  |  |
| Analyst                                      | SEB                     |   | Highway/Direction of Travel                            | Northbou  | ınd I-87                       |  |  |  |  |
| Agency or Company                            | CHA                     |   | From/To  | Exit 5 to |                                |  |  |  |  |
| Date Performed                               | 6/22/2011               |   | Jurisdiction   | NYSD01    |                                |  |  |  |  |
| Analysis Time Period                         | AM                      |   | Analysis Year  | 2036 No-  | -Build                         |  |  |  |  |
| Project Description Exit 4                   |                         |   |  |           |                                |  |  |  |  |
| ☑ Oper.(LOS)                                 |                         |   | Des.(N)  | Plar      | nning Data                     |  |  |  |  |
| Flow Inputs                                  |                         |   |  |           |                                |  |  |  |  |
| Volume, V                                    | 2600                    | veh/h   | Peak-Hour Factor, PHF                                  | 0.92      |                                |  |  |  |  |
| <b>AADT</b>                                  |                         | veh/day   | %Trucks and Buses, P <sub>T</sub>                      | 2         |                                |  |  |  |  |
| Peak-Hr Prop. of AADT, K                     |                         |   | %RVs, P <sub>R</sub>                                   | 0         |                                |  |  |  |  |
| Peak-Hr Direction Prop, D                    |                         |   | General Terrain:                                       | Level     |                                |  |  |  |  |
| DDHV = AADT x K x D                          | 4.00                    | veh/h   | Grade % Length   | mi        |                                |  |  |  |  |
| Oriver type adjustment                       | 1.00                    |   | Up/Down %  |           |                                |  |  |  |  |
| Calculate Flow Adjustr                       |                         |   |  | 4.0       |                                |  |  |  |  |
| f <sub>p</sub>                               | 1.00                    |   | $E_R$  | 1.2       |                                |  |  |  |  |
| E <sub>T</sub>                               | 1.5                     |   | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$           | 0.990     |                                |  |  |  |  |
| Speed Inputs                                 |                         |   | Calc Speed Adj and FF                                  | S         |                                |  |  |  |  |
| _ane Width                                   | 12.0                    | ft  | $f_{LW}$   |           | mi/h                           |  |  |  |  |
| Rt-Shoulder Lat. Clearance                   | 6.0                     | ft  |  |           | mi/h                           |  |  |  |  |
| nterchange Density                           | 0.50                    | I/mi  | f <sub>LC</sub>  |           |                                |  |  |  |  |
| Number of Lanes, N                           | 4                       |   | f <sub>ID</sub>  |           | mi/h                           |  |  |  |  |
| FFS (measured)                               | 56.0                    | mi/h  | f <sub>N</sub>   |           | mi/h                           |  |  |  |  |
| Base free-flow Speed, BFFS                   |                         | mi/h  | FFS  | 56.0      | mi/h                           |  |  |  |  |
| LOS and Performance                          | Measures                |   | Design (N)   |           |                                |  |  |  |  |
|  |                         |   | Design (N)   |           |                                |  |  |  |  |
| Operational (LOS)                            |                         |   | Design LOS   |           |                                |  |  |  |  |
| $v_p = (V \text{ or DDHV}) / (PHF \times N)$ | x f <sub>HV</sub> x 714 | 20/2/12   |  | ef v      |                                |  |  |  |  |
| f <sub>p</sub> )                             | 714                     | pc/h/ln   | $v_p = (V \text{ or DDHV}) / (PHF \times N)$           | HV X      | pc/h                           |  |  |  |  |
| 5  | 56.0                    | mi/h  | $f_p$ )  |           |                                |  |  |  |  |
| $D = v_p / S$                                | 12.8                    | pc/mi/ln  | S  |           | mi/h                           |  |  |  |  |
| LOS  | 72.0<br>B               | Pomini  | $D = v_p / S$  |           | pc/mi/ln                       |  |  |  |  |
| LUS  | D                       |   | Required Number of Lanes, N                            | I         |                                |  |  |  |  |
| Glossary                                     |                         |   | Factor Location  |           |                                |  |  |  |  |
| N - Number of lanes                          | S - Speed               |   | F  |           | f = F.4.3.3.00 4               |  |  |  |  |
| V - Hourly volume                            | D - Density             |   | E <sub>R</sub> - Exhibits23-8, 23-10                   |           | f <sub>LW</sub> - Exhibit 23-4 |  |  |  |  |
| , - Flow rate                                |                         |   | $E_{T}$ - Exhibits 23-8, 23-10, 23-11 $f_{LC}$ - Exhib |           |                                |  |  |  |  |
| r  |                         | f <sub>p</sub> - Page 23-12 f <sub>N</sub> - Exhibit 23-6 |  |           |                                |  |  |  |  |
| LOS - Level of service                       |                         | ee-now speed  | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-             | -2, 23-3  | f <sub>ID</sub> - Exhibit 23-7 |  |  |  |  |
| DDHV - Directional design ho                 | our volume              |   |  |           |                                |  |  |  |  |

### BASIC FREEWAY SEGMENTS WORKSHEET Average Passenger-Car Speed (mith) Free-Flow Spred FFS = 75 midt Application Input Output 70 mith 70 Operational (LOS) FFS, N, v<sub>D</sub> LOS, S, D 65 midt 60 miih Design (N) FFS, LOS, Vn N, S, D 60 55 mith FFS, LOS, N Design (v<sub>p</sub>) v<sub>p</sub>. S. D 50 Planning (LOS) FFS, N, AADT LOS, S, D Planning (M) FFS, LOS, AADT N, S, D 10 Planning (v<sub>n</sub>) FFS, LOS, N v<sub>p</sub>. S. D 30 -2400 400 00S1200 1600 2000 Flow Rate (pc/h/lin) Site Information General Information Highway/Direction of Travel Southbound I-87 Analyst SEB From/To Exit 6 to Exit 5 Agency or Company CHA Jurisdiction NYSDOT Date Performed 6/22/2011 Analysis Time Period Analysis Year 2036 No-Build AM Project Description Exit 4 回 Des.(N) Oper.(LOS) □ Planning Data Flow Inputs Peak-Hour Factor, PHF 0.92 Volume, V 6050 veh/h AADT veh/day %Trucks and Buses, P<sub>⊤</sub> 2 $%RVs, P_R$ 0 Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D General Terrain: Level $DDHV = AADT \times K \times D$ Grade % Length veh/h mi Up/Down % Driver type adjustment 1.00 Calculate Flow Adjustments 1.00 $E_{R}$ 1.2 ET 1.5 0.990 $f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS Speed Inputs Lane Width 12.0 ft $f_{LW}$ mi/h Rt-Shoulder Lat. Clearance 6.0 ft $f_{LC}$ mi/h Interchange Density 0.50 I/mi mi/h $f_{ID}$ Number of Lanes. N 4 $f_N$ mi/h FFS (measured) 56.0 mi/h FFS 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v = (V \text{ or DDHV}) / (PHF x N x f_{m} x)$

| $f_p$   | 1660 pc/h/ln   | $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$   | pc/h  |
|---|--|--|---|
| S<br>D = v <sub>p</sub> / S<br>LOS  | 56.0 mi/h<br>29.6 pc/mi/lr<br>D  | I <sub>p</sub> ) S D = v <sub>p</sub> / S Required Number of Lanes, N  | mi/h<br>pc/mi/ln  |
| Glossary  |  | Factor Location  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design | S - Speed D - Density FFS - Free-flow speed BFFS - Base free-flow spee | $E_R$ - Exhibits23-8, 23-10<br>$E_T$ - Exhibits 23-8, 23-10, 23-11<br>$f_p$ - Page 23-12<br>LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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|  | RAI                              | MPS AND                      | RAMP JUNG                            | CTIONS W  | ORKSHE   | ET               |                   |                                      |   |                                    |
|--|----------------------------------|------------------------------|--------------------------------------|---|--|------------------|-------------------|--------------------------------------|---|------------------------------------|
| General Infor  |                                  |                              |                                      | Site Infor  |  |                  |                   |                                      |   |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | SEB<br>CHA<br>9/08/<br>I AM      |                              | Jui<br>Jui                           | eeway/Dir of Tranction<br>risdiction<br>alysis Year | Travel Northbound I-87 Exit 2W On-Ramp NYSDOT 2036 No-Build                                    |                  |                   |                                      |   |                                    |
| Project Description  |                                  |                              | 7                                    | arysis i oui  |  | 20301            | NO Dalla          |                                      |   |                                    |
| nputs  |                                  |                              |                                      |   |  |                  |                   |                                      |   |                                    |
| Jpstream Adj Ramp  |                                  | Terrain: Level               |                                      |   |  |                  |                   |                                      | Downstrea<br>Ramp   | am Adj                             |
| Yes On   |                                  |                              |                                      |   |  |                  |                   |                                      | ☐ Yes   | ☐ On                               |
| □ No     Off   | Ī                                |                              |                                      |   |  |                  |                   |                                      | ™ No  | ☐ Off                              |
| up = 1100  | ft                               |                              |                                      |   |  |                  |                   |                                      | L <sub>down</sub> =                                       | ft                                 |
| $v_{\rm u} = 700 \text{ v}$  | eh/h                             | S                            | $_{FF} = 56.0 \text{ mph}$ Sketch (s | show lanes, L <sub>A</sub> ,                        | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$   | 0.0 m            | ph                |                                      | V <sub>D</sub> =  | veh/h                              |
| Conversion to  | o pc/h Und                       | der Base C                   | Conditions                           |   |  |                  |                   |                                      |   |                                    |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                          | Terrain                              | %Truck  | %Rv  |                  | $f_{HV}$          | f <sub>p</sub>                       | v = V/PHF   | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 2600                             | 0.92                         | Level                                | 2   | 0  | +                | .990              | 1.00                                 |   | 854                                |
| Ramp   | 380                              | 0.92                         | Level                                | 2   | 0  | +-               | .990              | 1.00                                 |   | 117                                |
| JpStream<br>DownStream   | 700                              | 0.92                         | Level                                | 2   | 0  | 0                | .990              | 1.00                                 | -   | 768                                |
| DOWNSHEAM  |                                  | Merge Areas                  |                                      |   |  |                  |                   | Diverge Area                         | ls.   |                                    |
| stimation of   | Estimati                         | on (                         | of v <sub>12</sub>                   | Divorge 7 ii ou                                     |  |                  |                   |                                      |   |                                    |
|  | V <sub>12</sub> = V <sub>F</sub> | (P <sub>EM</sub> )           |                                      |   |  |                  | \/ -              | - \/ - \//                           | \/ \D   |                                    |
| EQ =   |                                  | (Equation 2                  | 5-2 or 25-3)                         |   | -  |                  | v <sub>12</sub> - | = V <sub>R</sub> + (V <sub>F</sub> - | <sup>v</sup> <sub>R</sub> ル <sub>FD</sub><br>25-8 or 25-9 | `                                  |
| r <sub>FM</sub> =  |                                  |                              | on (Exhibit 25-5)                    |   | L <sub>EQ</sub> =  |                  |                   | -                                    | ation (Exhibit :  |                                    |
| 12 =   | 1716                             |                              | ,                                    |   | P <sub>FD</sub> =  |                  |                   | pc/h                                 | ונוטוו (באוווטוני.  | 20-12)                             |
| <sub>3</sub> or V <sub>av34</sub>                                      |                                  |                              | n 25-4 or 25-                        |   | $V_{12} = V_3 \text{ or } V_{av34}$  |                  |                   | •                                    | on 25-15 or 25-   | 14)                                |
|  | 5)                               |                              |                                      |   |  | <b>\</b> 2       | 700 nc/h2         |                                      |   | 10)                                |
| s $V_3$ or $V_{av34} > 2,70$   |                                  |                              |                                      |   | Is $V_3$ or $V_{av34} > 2,700$ pc/h?  Yes No<br>Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No |                  |                   |                                      |   |                                    |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5 *                          | ·=                               |                              |                                      |   | If Yes, $V_{12a} = pc/h$ (Equation 25-18)  |                  |                   |                                      |   |                                    |
| Yes,V <sub>12a</sub> =   | •                                | (Equation 25                 | -8)                                  |   |  |                  |                   | pc/ii (Equa                          | 11011 23-10)  |                                    |
| Capacity Che   |                                  |                              |                                      |   | Capacity   | y Cr             |                   | . 1                                  |   |                                    |
|  | Actual                           | Ca                           | apacity                              | LOS F?  | \  |                  | Actua             |                                      | Capacity  | LOS F                              |
|  |                                  |                              |                                      |   | V <sub>F</sub>   |                  |                   | Exhibit 2                            | <del></del>   |                                    |
| $V_{FO}$   | 3271                             | Exhibit 25-7                 |                                      | No  | $V_{FO} = V_{F}$   | - V <sub>R</sub> |                   | Exhibit 2                            | _   |                                    |
|  |                                  |                              |                                      |   | V <sub>R</sub> Exhibit   |                  |                   |                                      |   |                                    |
| low Entering   |                                  |                              |                                      |   | Flow En  | 1                |                   |                                      | ence Are  |                                    |
|  | Actual                           | <u> </u>                     | Desirable                            | Violation?  | .,   | -                | Actual            | Max De                               |   | Violation?                         |
| V <sub>R12</sub>   | 2133                             | Exhibit 25-7                 | 4600:AII                             | No  | V <sub>12</sub>  | Ļ                |                   | Exhibit 25-14                        |   | . =\                               |
| evel of Serv   |                                  |                              |                                      |   |  |                  |                   |                                      | tion (if no   | t F)                               |
| 10   |                                  | 0.0078 V <sub>12</sub> - 0.0 | 0627 L <sub>A</sub>                  |   |  |                  |                   | 0.0086 V <sub>12</sub>               | - 0.009 L <sub>D</sub>                                    |                                    |
| O <sub>R</sub> = 16.6 (pc  |                                  |                              |                                      |   |  | c/mi/            | ,                 |                                      |   |                                    |
| OS = B (Exhib  |                                  |                              |                                      |   |  |                  | it 25-4)          |                                      |   |                                    |
| Speed Detern   | nination                         |                              |                                      |   | Speed D  |                  |                   | ion                                  |   |                                    |
| M <sub>S</sub> = 0.286 (Exil   | oit 25-19)                       |                              |                                      |   | 3  |                  | 25-19)            |                                      |   |                                    |
| $S_{R} = 52.0 \text{ mph} ($   | (Exhibit 25-19)                  |                              |                                      |   | I ''   |                  | hibit 25-19       |                                      |   |                                    |
| <sub>0</sub> = 53.7 mph (  | (Exhibit 25-19)                  |                              |                                      |   | $S_0 = mp$   | oh (Ex           | hibit 25-19       | 9)                                   |   |                                    |
|  | (Exhibit 25-14)                  |                              |                                      |   | S = mp   | oh (Ex           | hibit 25-15       | <u>5)</u>                            |   |                                    |
| pyright © 2007 Unive   | ersity of Florida, A             | All Rights Reserv            | ed                                   |   | HCS+ <sup>™</sup> \  | /ersior          | n 5.3             |                                      | Generated: 12/  | 16/2011 8:5                        |
|  |                                  |                              |                                      |   |  |                  |                   |                                      |   |                                    |

|   |                          | IVAIIII                  | S AND RAM                |  |   |                     |                                       |  |                     |                |
|---|--------------------------|--------------------------|--------------------------|--|---|---------------------|---------------------------------------|--|---------------------|----------------|
| General Info  | ormation                 |                          |                          | Site Infor   | mation  |                     |                                       |  |                     |                |
| Analyst<br>Agency or Compa<br>Date Performed<br>Analysis Time Per | 9/08                     |                          | Ji<br>Ji                 | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year |   | Exit 4<br>NYSD      | ound I-87<br>NB Off<br>OT<br>No-Build |  |                     |                |
| Project Description   | n Exit 4                 |                          |                          |  |   |                     |                                       |  |                     |                |
| Inputs  |                          | 1                        |                          |  |   |                     |                                       |  | ī                   |                |
| Upstream Adj Ran  |                          | Terrain: Leve            | l                        |  |   |                     |                                       |  | Downstrea<br>Ramp   | m Adj          |
| Yes C   |                          |                          |                          |  |   |                     |                                       |  | ✓ Yes               | ✓ On           |
| ✓ No ☐ (  | OĦ                       |                          |                          |  |   |                     |                                       |  | □ No                | ☐ Off          |
| L <sub>up</sub> = ft  |                          | S                        | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4                             | 10.0 mi             |                                       |  | L <sub>down</sub> = | 2660 ft        |
| V <sub>u</sub> = veh  |                          |                          | Sketch (                 | show lanes, L <sub>A</sub>                                 |   |                     |                                       |  | V <sub>D</sub> =    | 640 veh/h      |
| Conversion  |                          | der Base (               | Conditions               | <u>,                                      </u>             | 1   |                     |                                       | 1                                      | n e                 |                |
| (pc/h)  | V<br>(Veh/hr)            | PHF                      | Terrain                  | %Truck %Rv f <sub>HV</sub> f <sub>p</sub>                  |   | f <sub>p</sub>      | v = V/PHF                             | x f <sub>HV</sub> x f <sub>p</sub>     |                     |                |
| Freeway   | 3000                     | 0.92                     | Level                    | 2  | 0   | 0.990               |                                       | 1.00                                   | 329                 |                |
| Ramp  | 800                      | 0.82                     | Level                    | 2  | 0   | 0                   | .990                                  | 1.00                                   | 98                  | 5              |
| UpStream<br>DownStream  | 640                      | 0.92                     | Lovol                    | 1 2  | 0   | +                   | .990                                  | 1.00                                   | 70                  | າ              |
| Downsteam   | 640                      | Merge Areas              | Level                    | 2  | U   | 0                   |                                       | Diverge Areas                          | 70                  | ა              |
| Estimation of v <sub>12</sub>                                     |                          |                          |                          |  |   | ion d               | of v <sub>12</sub>                    | Divorgo / irous                        |                     |                |
|   |                          | /D \                     |                          |  |   |                     |                                       | \/ . (\/ \/                            | \D                  |                |
| $V_{12} = V_F (P_{FM})$   |                          |                          |                          |  |   |                     |                                       | = V <sub>R</sub> + (V <sub>F</sub> - V |                     |                |
| L <sub>EQ</sub> =   |                          | ation 25-2 or            |                          |  | L <sub>EQ</sub> =                               |                     |                                       | (Equation 25-8                         |                     | 05 40)         |
| P <sub>FM</sub> =   | _                        | Equation (E              | EXNIBIT 25-5)            |  | P <sub>FD</sub> =                               |                     |                                       | .632 using Ed                          | quation (Exh        | bit 25-12)     |
| V <sub>12</sub> =   | pc/h                     |                          | 4 05 5)                  |  | V <sub>12</sub> =                               |                     |                                       | 444 pc/h                               |                     | 0= 10)         |
| V <sub>3</sub> or V <sub>av34</sub>                               |                          | (Equation 25             | -4 or 25-5)              |  | V <sub>3</sub> or V <sub>av34</sub>             | 2 .                 |                                       | 49 pc/h (Equa                          | ation 25-15         | or 25-16)      |
| Is $V_3$ or $V_{av34} > 2$ ,                                      |                          |                          |                          |  |   |                     |                                       | Yes ✓ No                               |                     |                |
| Is $V_3$ or $V_{av34} > 1$ .                                      | :=                       |                          | . 0)                     |  | 0 0.0   |                     |                                       | ☐ Yes ☑ No                             | 05 40)              |                |
| If Yes,V <sub>12a</sub> =   |                          | (Equation 25             | 9-8)                     |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |                     |                                       |  |                     |                |
| Capacity Cl   |                          | 1                        |                          | 1  | Capacit   | y Ch                | 1                                     |  |                     | 1.00.50        |
|   | Actual                   |                          | apacity                  | LOS F?   | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \           |                     | Actual                                | <del></del>                            | pacity              | LOS F          |
| .,  |                          | 1                        |                          |  | V <sub>F</sub>                                  |                     | 3293                                  | Exhibit 25-1                           | _                   | No             |
| V <sub>FO</sub>   |                          | Exhibit 25-7             |                          |  | $V_{FO} = V_{F}$                                | - V <sub>R</sub>    | 2308                                  | Exhibit 25-1                           |                     | No             |
|   |                          |                          |                          |  | V <sub>R</sub>                                  |                     | 985                                   | Exhibit 25-3                           | 3 2100              | No             |
| Flow Enteri   | ng Merge lı              | nfluence A               | rea                      |  | Flow En   | terii               | ng Dive                               | rge Influen                            | ce Area             |                |
|   | Actual                   |                          | Desirable                | Violation?   |   | <del> </del>        | Actual                                | Max Desiral                            |                     | Violation      |
| V <sub>R12</sub>  |                          | Exhibit 25-7             |                          |  | V <sub>12</sub>                                 |                     | 2444                                  | Exhibit 25-14                          | 4400:All            | No             |
| Level of Se   | vice Deteri              | mination (i              | f not F)                 |  | Level of  | Ser                 | vice De                               | eterminatio                            | n (if not l         | <del>-</del> ) |
| $D_R = 5.475 +$   | 0.00734 v <sub>R</sub> + | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |  |   | $D_R = \frac{1}{2}$ | 4.252 + 0                             | 0.0086 V <sub>12</sub> - 0             | .009 L <sub>D</sub> |                |
| $D_R = (pc/n)$  | ni/ln)                   |                          |                          |  | $D_R = 22$                                      | 2.1 (pc             | :/mi/ln)                              |  |                     |                |
| LOS = (Exh  | ibit 25-4)               |                          |                          |  | LOS = C (Exhibit 25-4)                          |                     |                                       |  |                     |                |
| Speed Dete  | rmination                |                          |                          |  | Speed D   | Detei               | rminati                               | on                                     |                     |                |
| M <sub>S</sub> = (Exibit  | 25-19)                   |                          |                          |  | D <sub>s</sub> = 0.4                            | 452 <b>(E</b>       | xhibit 25                             | -19)                                   |                     |                |
| · ·   | xhibit 25-19)            |                          |                          |  |   | 9.7 mpl             | h (Exhibit                            | 25-19)                                 |                     |                |
|   | xhibit 25-19)            |                          |                          |  | 1 ''  | -                   | `<br>h (Exhibit                       |  |                     |                |
| 1   |                          |                          |                          |  | . "   | -                   | h (Exhibit                            |  |                     |                |
| S = mph (Exhibit 25-14)   |                          |                          |                          |  |   | mp                  | . ,                                   | ,                                      |                     |                |

|  |                        |                           | WPS AND                      | RAMP JUN                  |   |   | <u>:EI                                    </u>              |                          |                                      |                                      |  |
|--|------------------------|---------------------------|------------------------------|---------------------------|---|---|---|--------------------------|--------------------------------------|--------------------------------------|--|
| General  | Inform                 | ation                     |                              |                           | Site Infor  |   |   |                          |                                      |                                      |  |
| Analyst<br>Agency or Co<br>Date Perform<br>Analysis Time | ed                     | SEB<br>CHA<br>9/08/<br>AM | 2011                         | Ju<br>Ju                  | eeway/Dir of Tr<br>Inction<br>Irisdiction<br>nalysis Year |   | Northbound I-1<br>Exit 4 NB On-1<br>NYSDOT<br>2036 No-Build | Ramp                     |                                      |                                      |  |
| Project Descr  |                        |                           |                              |                           |   |   | 2000 110 24.14  |                          |                                      |                                      |  |
| Inputs   |                        |                           |                              |                           |   |   |   |                          |                                      |                                      |  |
| Jpstream Adj   | j Ramp                 |                           | Terrain: Leve                | l                         |   |   |   |                          | Downstro<br>Ramp                     | eam Adj                              |  |
|  | ☐ On                   |                           |                              |                           |   |   |   |                          | ✓ Yes                                | ☐ On                                 |  |
| ☑ No   | ☐ Off                  |                           |                              |                           |   |   |   |                          | □ No                                 | ✓ Off                                |  |
| _ <sub>up</sub> =  | ft                     |                           |                              |                           |   |   |   |                          | L <sub>down</sub> =                  | 3500 ft                              |  |
| •  | veh/h                  |                           | S                            | FF = 56.0 mph<br>Sketch ( | show lanes, L <sub>A</sub> ,                              | $S_{FR} = 4$ $L_{D_f} V_{D_f} V_f$              | 0.0 mph   |                          | V <sub>D</sub> =                     | 480 veh/h                            |  |
| Convers  | ion to                 | pc/h Und                  | der Base                     | Conditions                |   | D K I   |   |                          |                                      |                                      |  |
| (pc/h)   |                        | V<br>(Veh/hr)             | PHF                          | Terrain                   | %Truck  | %Rv   | f <sub>HV</sub>   | fp                       | v = V/PH                             | F x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  |                        | 2200                      | 0.92                         | Level                     | 2   | 0   | 0.990   | 1.00                     |                                      | 2415                                 |  |
| Ramp   |                        | 640                       | 0.92                         | Level                     | 2   | 0   | 0.990   | 1.00                     |                                      | 703                                  |  |
| UpStream   |                        |                           |                              |                           |   |   |   |                          |                                      |                                      |  |
| DownStream   | 1                      | 480                       | 0.96                         | Level                     | 2   | 0   | 0.990   | 1.00                     |                                      | 505                                  |  |
| Estimatio  | on of v                |                           | Merge Areas                  |                           |   | Estimati  | ion of v <sub>12</sub>                                      | Diverge A                | reas                                 |                                      |  |
| LSuman   | OII OI V               |                           |                              |                           |   | LSumau  |   | '                        |                                      |                                      |  |
|  |                        | $V_{12} = V_F$            |                              |                           |   |   | V <sub>12</sub>   | $_{2} = V_{R} + (V_{F})$ | 11 12                                |                                      |  |
| -EQ =  |                        | 2452.65                   | (Equation                    | 25-2 or 25-3)             |   | L <sub>EQ</sub> =                               |   |                          | n 25-8 or 25-                        |                                      |  |
| P <sub>FM</sub> =  |                        |                           |                              | ion (Exhibit 25-5)        |   | P <sub>FD</sub> =                               |   | using Eq                 | juation (Exhibi                      | t 25-12)                             |  |
| / <sub>12</sub> =  |                        | 1456                      |                              |                           |   | V <sub>12</sub> =                               |   | pc/h                     |                                      |                                      |  |
| $V_3$ or $V_{av34}$                                      |                        |                           |                              | n 25-4 or 25-5)           |   | $V_3$ or $V_{av34}$                             |   |                          | ation 25-15 or 2                     | 5-16)                                |  |
|  | -                      | oc/h? 🗌 Ye                |                              |                           |   |   | <sub>34</sub> > 2,700 pc/h                                  |                          |                                      |                                      |  |
| Is V <sub>3</sub> or V <sub>av34</sub>                   | <sub>4</sub> > 1.5 * V | -=                        |                              |                           |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No  |   |                          |                                      |                                      |  |
| f Yes,V <sub>12a</sub> =                                 |                        |                           | (Equation 25                 | 5-8)                      |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |   |                          |                                      |                                      |  |
| Capacity   | Chec                   | ks                        |                              |                           |   | Capacity Checks                                 |   |                          |                                      |                                      |  |
|  |                        | Actual                    | C                            | apacity                   | LOS F?  |   | Acti  | ıal                      | Capacity                             | LOS F                                |  |
|  |                        |                           |                              |                           |   | V <sub>F</sub>                                  |   | Exhib                    | it 25-14                             |                                      |  |
| $V_{FO}$   |                        | 3118                      | Exhibit 25-7                 |                           | No  | $V_{FO} = V_{F}$                                | - V <sub>R</sub>  | Exhib                    | it 25-14                             |                                      |  |
|  |                        |                           |                              |                           |   | $V_R$   |   | Exhib                    | it 25-3                              |                                      |  |
| Flow Ent   | tering                 | Merge In                  | fluence A                    | rea                       |   | Flow En   | tering Di   | verge Inf                | luence Are                           | <del></del>                          |  |
|  | Ĭ                      | Actual                    | 1                            | Desirable                 | Violation?  |   | Actual  |                          | Desirable                            | Violation?                           |  |
| $V_{R12}$  |                        | 2159                      | Exhibit 25-7                 | 4600:All                  | No  | V <sub>12</sub>                                 |   | Exhibit 25               | -14                                  |                                      |  |
|  |                        | e Detern                  | nination (                   | if not F)                 |   | Level of  | Service   | Determin                 | ation (if n                          | ot F)                                |  |
| D <sub>R</sub> = 5                                       | 5.475 + 0.0            | 00734 v <sub>R</sub> + 0  | 0.0078 V <sub>12</sub> - 0.0 | 00627 L <sub>A</sub>      |   | [   | O <sub>R</sub> = 4.252                                      | + 0.0086 V               | <sub>12</sub> - 0.009 L <sub>D</sub> |                                      |  |
| ) <sub>R</sub> = 1                                       | 16.3 (pc/m             | i/ln)                     |                              |                           |   | $D_R = (p)$                                     | c/mi/ln)  |                          |                                      |                                      |  |
| LOS = B (Exhibit 25-4)                                   |                        |                           |                              |                           |   | xhibit 25-4)                                    |   |                          |                                      |                                      |  |
| Speed Determination                                      |                        |                           |                              |                           | <del></del>   | Petermina                                       |   |                          |                                      |                                      |  |
| M <sub>S</sub> = 0.283 (Exibit 25-19)                    |                        |                           |                              |                           |   | xhibit 25-19)                                   |   |                          |                                      |                                      |  |
| Ü  | -                      | hibit 25-19)              |                              |                           |   | -   | ph (Exhibit 25-   | 19)                      |                                      |                                      |  |
|  |                        | hibit 25-19)              |                              |                           |   |   |   |                          |                                      |                                      |  |
| $S_0 = 54.$  | -                      |                           |                              |                           |   | S <sub>0</sub> = mph (Exhibit 25-19)            |   |                          |                                      |                                      |  |
| S = 52.7 mph (Exhibit 25-14)                             |                        |                           |                              |                           |   | S = mph (Exhibit 25-15)                         |   |                          |                                      |                                      |  |

|  |                             | IVAIIII                  | S AND RAM                |   |   | 11110              |                    |  |                     |                                    |  |
|--|-----------------------------|--------------------------|--------------------------|---|---|--------------------|--------------------|--|---------------------|------------------------------------|--|
| General Infor  | mation                      |                          |                          | Site Infor  |   |                    |                    |  |                     |                                    |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | SEB<br>CHA<br>9/08/<br>I AM | 2011                     | Jı<br>Jı                 | reeway/Dir of Tra<br>unction<br>urisdiction<br>nalysis Year | f Travel Northbound I-87 Exit 5 NB Off NYSDOT 2036 No-Build |                    |                    |  |                     |                                    |  |
| Project Description  | Exit 4                      |                          |                          |   |   |                    |                    |  |                     |                                    |  |
| Inputs   |                             | ,                        |                          |   |   |                    |                    |  |                     |                                    |  |
| Upstream Adj Ramp  |                             | Terrain: Level           |                          |   |   |                    |                    |  | Downstreai<br>Ramp  | m Adj                              |  |
| ▼ Yes ▼ On   |                             |                          |                          |   |   |                    |                    |  | ☐ Yes               | □ On                               |  |
| □ No □ Off   | f                           |                          |                          |   |   |                    |                    |  | ✓ No                | ☐ Off                              |  |
| L <sub>up</sub> = 3500   | ft                          | <u> </u>                 | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 3   | 25 0 mr            | h.                 |  | L <sub>down</sub> = | ft                                 |  |
| $V_u = 640 \text{ ve}$   |                             |                          | Sketch (                 | show lanes, L <sub>A</sub> ,                                |   | 10.0 mp            | )II                |  | V <sub>D</sub> =    | veh/h                              |  |
| Conversion to  | o pc/h Und                  | der Base (               | Conditions               |   |   |                    |                    | -                                      |                     |                                    |  |
| (pc/h)   | V<br>(Veh/hr)               | PHF                      | Terrain                  | %Truck  | %Rv   |                    | f <sub>HV</sub>    | f <sub>p</sub>                         | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 2800                        | 0.92                     | Level                    | 2   | 0   | 0                  | .990               | 1.00                                   | 307                 |                                    |  |
| Ramp   | 480                         | 0.96                     | Level                    | 2   | 0   | 0 0.990 1.00       |                    | 1.00                                   | 50                  |                                    |  |
| UpStream   | 640                         | 0.92                     | Level                    | 2   | 0   | 0 0.990 1.00       |                    | 703                                    |                     |                                    |  |
| DownStream   |                             | Merge Areas              |                          | <u> </u>  |   |                    |                    | L<br>Diverge Areas                     |                     |                                    |  |
| Estimation of v <sub>12</sub>  |                             |                          |                          |   |   | ion c              | of v <sub>12</sub> | biverge / ireas                        |                     |                                    |  |
|  |                             | /D \                     |                          |   |   |                    |                    | \/ . (\/ \/                            | \D                  |                                    |  |
| $V_{12} = V_F (P_{FM})$  |                             |                          |                          |   |   |                    |                    | = V <sub>R</sub> + (V <sub>F</sub> - V |                     | a= a\                              |  |
| L <sub>EQ</sub> =  |                             | ation 25-2 or            |                          |   | L <sub>EQ</sub> =   |                    |                    | 803.97 (Equat                          |                     |                                    |  |
| P <sub>FM</sub> =  | _                           | Equation (E              | Xnidit 25-5)             |   | P <sub>FD</sub> =   |                    |                    | .718 using Ed                          | juation (Exhi       | bit 25-12)                         |  |
| V <sub>12</sub> =  | pc/h                        | /F 0.F                   | 4 05 5)                  |   | V <sub>12</sub> =   |                    |                    | 351 pc/h                               |                     |                                    |  |
| V <sub>3</sub> or V <sub>av34</sub>                                    |                             | (Equation 25             | -4 or 25-5)              |   | V <sub>3</sub> or V <sub>av34</sub>                         | . 2 -              |                    | 23 pc/h (Equa                          | ition 25-15 (       | or 25-16)                          |  |
| Is $V_3$ or $V_{av34} > 2,70$  |                             |                          |                          |   |   |                    |                    | Yes ☑ No                               |                     |                                    |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *                         | · <del>-</del>              |                          | 0)                       |   |   |                    |                    | Yes Mo                                 | 05.40\              |                                    |  |
| If Yes,V <sub>12a</sub> =  |                             | (Equation 25             | -8)                      |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)             |                    |                    |  |                     |                                    |  |
| Capacity Che   | 1                           | 1 0                      |                          | 1 100 50  | Capacity  | y Ch               |                    |  |                     | Lione                              |  |
|  | Actual                      | Ca                       | pacity                   | LOS F?  | \   |                    | Actual             |  | pacity              | LOS F                              |  |
|  |                             | 1                        |                          |   | V <sub>F</sub>  |                    | 3074               | Exhibit 25-1                           | _                   | No                                 |  |
| V <sub>FO</sub>  |                             | Exhibit 25-7             |                          |   | $V_{FO} = V_{F}$  | - V <sub>R</sub>   | 2569               | Exhibit 25-1                           |                     | No                                 |  |
|  |                             |                          |                          |   | V <sub>R</sub>  |                    | 505                | Exhibit 25-3                           | 3 2000              | No                                 |  |
| Flow Entering  | g Merge In                  | fluence A                | rea                      |   | Flow En   | terir              | ng Dive            | rge Influen                            | ce Area             |                                    |  |
|  | Actual                      | 1                        | Desirable                | Violation?  |   | _                  | Actual             | Max Desiral                            |                     | Violation                          |  |
| V <sub>R12</sub>   |                             | Exhibit 25-7             |                          |   | V <sub>12</sub>   |                    | 2351               | Exhibit 25-14                          | 4400:All            | No                                 |  |
| Level of Serv  |                             |                          |                          |   | _   |                    |                    | terminatio                             |                     | <del>-</del> )                     |  |
| $D_R = 5.475 + 0.$   | 00734 v <sub>R</sub> +      | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |   | [   | D <sub>R</sub> = 4 | 1.252 + 0          | 0.0086 V <sub>12</sub> - 0.            | 009 L <sub>D</sub>  |                                    |  |
| D <sub>R</sub> = (pc/mi/   | ln)                         |                          |                          |   | $D_R = 22$  | 2.2 (pc            | /mi/ln)            |  |                     |                                    |  |
| LOS = (Exhibi  | t 25-4)                     |                          |                          |   | LOS = C   | (Exhi              | bit 25-4)          |  |                     |                                    |  |
| Speed Detern   | nination                    |                          |                          |   | Speed D   | Deter              | minati             | on                                     |                     |                                    |  |
| M <sub>S</sub> = (Exibit 2   |                             |                          |                          |   | $D_s = 0.4$   | 473 (E             | xhibit 25          | -19)                                   |                     |                                    |  |
| ľ  | ibit 25-19)                 |                          |                          |   | S <sub>R</sub> = 49   | 9.4 mpł            | ı (Exhibit         | 25-19)                                 |                     |                                    |  |
|  | ibit 25-19)                 |                          |                          |   |   | I.4 mph            | (Exhibit           | 25-19)                                 |                     |                                    |  |
| · ·  | ibit 25-14)                 |                          |                          |   | 1.  | -                  | i (Exhibit         |  |                     |                                    |  |
| . ,  |                             |                          |                          |   | 1   |                    | •                  | •                                      |                     |                                    |  |

|  |                                  | RAMP                     | S AND RAI                 | <b>IP JUNCTI</b>  | ONS WOR   | RKS                                  | HEET  |   |                                    |              |  |  |
|--|----------------------------------|--------------------------|---------------------------|---|---|--------------------------------------|---|---|------------------------------------|--------------|--|--|
| General Info   | rmation                          |                          | <u> </u>                  | Site Infor  |   |                                      |   |   |                                    |              |  |  |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric | SEB<br>y CHA<br>9/08/<br>od AM   |                          | J                         | reeway/Dir of Tr<br>unction<br>urisdiction<br>analysis Year | avel S<br>E<br>N                                | Southb<br>Exit 2V<br>NYSD(<br>2036 N | V Off   |   |                                    |              |  |  |
| Project Description  | Exit 4                           |                          |                           |   |   |                                      |   |   |                                    |              |  |  |
| Inputs   |                                  | Terrain: Leve            | ıl                        |   |   |                                      |   |   | Downstrea                          | m Adi        |  |  |
| Upstream Adj Ramı  |                                  |                          |                           |   |   |                                      |   |   | Ramp                               |              |  |  |
| ™ No □ O   |                                  |                          |                           |   |   |                                      |   |   | ✓ Yes                              | ☑ On         |  |  |
|  | 11                               |                          |                           |   |   |                                      |   |   | □ No                               | ☐ Off        |  |  |
| L <sub>up</sub> = ft   |                                  |                          | E4.0 mnh                  |   | C 4/  | 0.0                                  | . h   |   | L <sub>down</sub> =                | 1300 ft      |  |  |
| V <sub>u</sub> = veh/  | h                                | 3                        | FF = 56.0 mph<br>Sketch ( | ( show lanes, L <sub>A</sub> ,                              | $S_{FR} = 40$ $L_{D'}V_{R'}V_{f}$               | u.u mp                               | JΠ  |   | V <sub>D</sub> =                   | 360 veh/h    |  |  |
| Conversion   | to pc/h Un                       | der Base (               | Conditions                | •   |   |                                      |   |   |                                    |              |  |  |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                      | Terrain                   | %Truck  | %Rv f <sub>HV</sub> f <sub>p</sub>              |                                      | f <sub>p</sub>  | v = V/PHF   | x f <sub>HV</sub> x f <sub>p</sub> |              |  |  |
| Freeway  | 5300                             | 0.92                     | Level                     | 2   | 0 0.990   |                                      | 1.00  | 58  | 18                                 |              |  |  |
| Ramp   | 760                              | 0.92                     | Level                     | 2   | 0   | 0 0.990                              |   | 1.00  | 83                                 | 34           |  |  |
| UpStream<br>DownStream   | 360                              | 0.92                     | Level                     | 2   | 0   |                                      | .990  | 1.00  | 395                                |              |  |  |
| Downstream   |                                  | Merge Areas              | Levei                     |   | 0   | U                                    |   | Diverge Areas                                       | 3,                                 | 70           |  |  |
| Estimation o   |                                  | go 7 ouc                 |                           |   | Estimati  | on c                                 |   | 2.ve.ge / ede                                       |                                    |              |  |  |
|  | V <sub>12</sub> = V <sub>F</sub> | (P.,,)                   |                           |   |   |                                      |   | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | )P-2                               |              |  |  |
| L <sub>EQ</sub> =  | 12 1                             | ation 25-2 or            | 25-3)                     |   | L <sub>FO</sub> =                               |                                      |   | Equation 25-8                                       | ` ''                               |              |  |  |
| P <sub>FM</sub> =  |                                  | Equation (E              |                           |   | P <sub>FD</sub> =                               |                                      |   | .576 using Eq                                       |                                    | nibit 25-12) |  |  |
| V <sub>12</sub> =  | pc/h                             | ,                        | ,                         |   | V <sub>12</sub> =                               |                                      |   | 706 pc/h  | (=                                 | ,            |  |  |
| V <sub>3</sub> or V <sub>av34</sub>                                  | pc/h                             | (Equation 25             | 5-4 or 25-5)              |   | V <sub>3</sub> or V <sub>av34</sub>             |                                      |   | 112  pc/h (Equ                                      | ation 25-1                         | 5 or 25-16   |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                         | 00 pc/h?                         | s 🗆 No                   |                           |   |   | 4 > 2,7                              |   | ☐ Yes ☑ No  |                                    |              |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                         | * V <sub>12</sub> /2             | s 🗆 No                   |                           |   | Is V <sub>3</sub> or V <sub>av3</sub>           | 4 > 1.5                              | 5 * V <sub>12</sub> /2  | Tyes  ✓ No  |                                    |              |  |  |
| If Yes,V <sub>12a</sub> =  | pc/h                             | (Equation 25             | 5-8)                      |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |                                      |   |   |                                    |              |  |  |
| Capacity Ch  | ecks                             |                          |                           |   | Capacity Checks                                 |                                      |   |   |                                    |              |  |  |
|  | Actual                           | С                        | apacity                   | LOS F?  |   |                                      | Actual  | <del></del>   | pacity                             | LOS F?       |  |  |
|  |                                  |                          |                           |   | V <sub>F</sub>                                  |                                      | 5818  | Exhibit 25-1  | 4 6780                             | No           |  |  |
| $V_{FO}$   |                                  | Exhibit 25-7             |                           |   | $V_{FO} = V_{F}$                                | - V <sub>R</sub>                     | 4984  | Exhibit 25-1  | 4 6780                             | No           |  |  |
|  |                                  |                          |                           |   | V <sub>R</sub>                                  |                                      | 834   | Exhibit 25-3  | 2100                               | No           |  |  |
| Flow Enterin   |                                  | Υ                        |                           |   | Flow En   | 1                                    |   | rge Influen   |                                    |              |  |  |
| V  | Actual                           | i i                      | Desirable                 | Violation?  | 1 1/  | _                                    | Actual  | Max Desirab   |                                    | Violation?   |  |  |
| V <sub>R12</sub>   | vice Determ                      | Exhibit 25-7             | if not T\                 |   | V <sub>12</sub>                                 |                                      | 3706  | Exhibit 25-14                                       | 4400:All                           | No No        |  |  |
| Level of Serv  |                                  | •                        |                           |   |   |                                      |   | eterminatio   | -                                  | <i>r)</i>    |  |  |
| $D_{R} = 5.475 + 0$  |                                  | 0.0078 V <sub>12</sub> - | 0.00021 L <sub>A</sub>    |   |   |                                      |   | ).0086 V <sub>12</sub> - 0.                         | ooa r <sup>D</sup>                 |              |  |  |
| $D_R = (pc/m)$<br>LOS = (Exhib                                       | ,                                |                          |                           |   |   |                                      | :/mi/ln)  |   |                                    |              |  |  |
| LOS = (Exhibit 25-4)  Speed Determination                            |                                  |                          |                           |   | Speed D   | `                                    | bit 25-4)   | 0 <i>n</i>  |                                    |              |  |  |
| •  |                                  |                          |                           |   | <del></del>                                     |                                      |   |   |                                    |              |  |  |
| M <sub>S</sub> = (Exibit 2   |                                  |                          |                           |   | -   | •                                    | xhibit 25   | *   |                                    |              |  |  |
| S <sub>R</sub> = mph (Exhibit 25-19)                                 |                                  |                          |                           |   |   | •                                    | S <sub>R</sub> = 49.9 mph (Exhibit 25-19)                                 |   |                                    |              |  |  |
|  |                                  |                          |                           |   |   |                                      | S <sub>0</sub> = 57.1 mph (Exhibit 25-19)<br>S = 52.3 mph (Exhibit 25-15) |   |                                    |              |  |  |
| S <sub>0</sub> = mph (Ex   | hibit 25-19)<br>hibit 25-14)     |                          |                           |   |   |                                      |   |   |                                    |              |  |  |

|  |                                  | RAMP                     | S AND RAM                   | IP JUNCTI   | ONS WO   | RKS                | HEET                                   |   |                     |                                    |
|--|----------------------------------|--------------------------|-----------------------------|---|--|--------------------|--|---|---------------------|------------------------------------|
| General Info   | rmation                          |                          |                             | Site Infor  |  |                    |  |   |                     |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio          | SEB<br>/ CHA<br>9/08/<br>d AM    |                          | J                           | reeway/Dir of Tr<br>unction<br>urisdiction<br>Analysis Year | ravel S<br>E   | Exit 4 S<br>NYSD(  | oound I-87<br>SB Off<br>OT<br>Jo-Build |   |                     |                                    |
| Project Description  | Exit 4                           |                          |                             |   |  |                    |  |   |                     |                                    |
| Inputs   |                                  | Terrain: Leve            | 1                           |   |  |                    |  |   | Б                   | A 11                               |
| Upstream Adj Ramp  |                                  | Terrum. Leve             | '                           |   |  |                    |  |   | Downstrea<br>Ramp   | ım Aaj                             |
| ✓ No ☐ Of  |                                  |                          |                             |   |  |                    |  |   | ✓ Yes               | ☑ On                               |
| I NO I O   | 11                               |                          |                             |   |  |                    |  |   | □ No                | ☐ Off                              |
| L <sub>up</sub> = ft   |                                  |                          |                             |   |  |                    |  |   | L <sub>down</sub> = | 3100 ft                            |
| V <sub>u</sub> = veh/ł   | h                                | S                        | $_{FF}$ = 56.0 mph Sketch ( | ( show lanes, L <sub>A</sub> ,                              | $S_{FR} = 40$ $L_{D_{i}}V_{R_{i}}V_{f}$  | 0.0 mp             | oh                                     |   | V <sub>D</sub> =    | 400 veh/l                          |
| Conversion t   | to pc/h Und                      | der Base (               | Conditions                  |   |  |                    |  |   |                     |                                    |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                      | Terrain                     | %Truck  | %Rv  |                    | f <sub>HV</sub>                        | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 5400                             | 0.92                     | Level                       | 2   | 0  | 0                  | .990                                   | 1.00  | 59                  | 28                                 |
| Ramp   | 1020                             | 0.92                     | Level                       | 2   | 0  | 0                  | .990                                   | 1.00  | 11                  | 20                                 |
| UpStream   | 100                              | 0.00                     |                             |   |  |                    | 205                                    | 1.00  |                     |                                    |
| DownStream   | 400                              | 0.93<br>Merge Areas      | Level                       | 3   | 0  | 0                  | .985                                   | 1.00<br>Diverge Areas                               | 43                  | 37                                 |
| Estimation o   |                                  | ivici ge Ai cas          |                             |   | Estimati   | on c               |  | Diverge Areas                                       |                     |                                    |
|  | V <sub>12</sub> = V <sub>F</sub> | (P)                      |                             |   |  |                    |  | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | /P                  |                                    |
| l <del>-</del>   | 12 1                             |                          | 25-3)                       |   | -  |                    |  | Equation 25-8                                       |                     |                                    |
| $L_{EQ}$ = (Equation 25-2 or 25-3)<br>$P_{FM}$ = using Equation (Exhibit 25-5) |                                  |                          |                             |   | L <sub>EQ</sub> =<br>P <sub>FD</sub> =   |                    |  | 560 using Eq  |                     | iihit 25 <sub>-</sub> 12)          |
| V <sub>12</sub> =  | pc/h                             | Lqualion (               | .XIII.DIL 20 0)             |   | V <sub>12</sub> =  |                    |  | 814 pc/h  | dation (Exi         | IIDI( 25-12)                       |
| V <sub>3</sub> or V <sub>av34</sub>  | •                                | (Equation 25             | -4 or 25-5)                 |   | V <sub>3</sub> or V <sub>av34</sub>  |                    |  | 114  pc/h (Equ                                      | ation 25-1          | 5 or 25-16                         |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,70                                  |                                  |                          | ,                           |   |  | , > 2,7            |  | Yes 🗹 No  | u 20 10             | 0. 20 10                           |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                                   |                                  |                          |                             |   |  |                    |  | Yes ✓ No  |                     |                                    |
| If Yes,V <sub>12a</sub> =  | · <del>-</del>                   | (Equation 25             | 5-8)                        |   | If Yes, V <sub>12a</sub> =   |                    |  | c/h (Equation                                       | 25-18)              |                                    |
| Capacity Che   |                                  |                          |                             |   | Capacity   |                    | ecks                                   |   |                     |                                    |
|  | Actual                           | С                        | apacity                     | LOS F?  |  |                    | Actual                                 | Ca  | pacity              | LOS F                              |
|  |                                  |                          |                             |   | $V_{F}$  |                    | 5928                                   | Exhibit 25-1  | 4 6780              | No                                 |
| $V_{FO}$   |                                  | Exhibit 25-7             |                             |   | $V_{FO} = V_{F}$   | - V <sub>R</sub>   | 4808                                   | Exhibit 25-1  | 4 6780              | No                                 |
|  |                                  |                          |                             |   | V <sub>R</sub>   |                    | 1120                                   | Exhibit 25-3  | 2100                | No                                 |
| Flow Enterin   | g Merge In                       | fluence A                | rea                         |   | Flow En  | terir              | ng Dive                                | rge Influen   | ce Area             |                                    |
|  | Actual                           | 1                        | Desirable                   | Violation?  |  | 1                  | Actual                                 | Max Desirab   |                     | Violation                          |
| V <sub>R12</sub>   |                                  | Exhibit 25-7             |                             |   | V <sub>12</sub>  |                    | 3814                                   | Exhibit 25-14                                       | 4400:All            | No                                 |
| Level of Serv  |                                  | •                        |                             |   |  |                    |  | terminatio  | -                   | <b>F</b> )                         |
| $D_R = 5.475 + 0$  | • •                              | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>      |   |  | O <sub>R</sub> = 4 | 4.252 + 0                              | .0086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>  |                                    |
| D <sub>R</sub> = (pc/mi/ln)  |                                  |                          |                             | D <sub>R</sub> = 32.8 (pc/mi/ln)                            |  |                    |  |   |                     |                                    |
| LOS = (Exhibit 25-4)   |                                  |                          |                             |   | `  | bit 25-4)          |  |   |                     |                                    |
| Speed Deteri   | mination                         |                          |                             |   | Speed D  |                    |  |   |                     |                                    |
| M <sub>S</sub> = (Exibit 2   | 25-19)                           |                          |                             |   | , and the second | •                  | xhibit 25                              | •   |                     |                                    |
| S <sub>R</sub> = mph (Exhibit 25-19)   |                                  |                          |                             |   | I  | •                  | n (Exhibit                             | ,   |                     |                                    |
|  |                                  |                          |                             |   |  |                    |  |   |                     |                                    |
| S <sub>0</sub> = mph (Ext  | hibit 25-19)<br>hibit 25-14)     |                          |                             |   | _  |                    | n (Exhibit<br>n (Exhibit               |   |                     |                                    |

|   | RAI                              | MPS AND I                     | RAMP JUNG                      | CTIONS W                     | ORKSHE   | ET_                                 |          |                         |                     |                                    |
|---|----------------------------------|-------------------------------|--------------------------------|------------------------------|--|-------------------------------------|----------|-------------------------|---------------------|------------------------------------|
| General Infor                                 | mation                           |                               |                                | Site Infor                   | mation   |                                     |          |                         |                     |                                    |
| Analyst                                       | SEB                              |                               | Fre                            | eeway/Dir of Tr              | avel :   | Southbound                          | l I-87   |                         |                     |                                    |
| gency or Company                              | CHA                              |                               | Ju                             | nction                       | I  | Exit 4 SB O                         | n-Ramp   |                         |                     |                                    |
| ate Performed                                 | 9/08/                            | 2011                          | Ju                             | risdiction                   | 1  | NYSDOT                              |          |                         |                     |                                    |
| nalysis Time Period                           | AM                               |                               | An                             | alysis Year                  | ,  | 2036 No-Bu                          | ild      |                         |                     |                                    |
| roject Description                            | Exit 4                           |                               |                                |                              |  |                                     |          |                         |                     |                                    |
| nputs   |                                  |                               |                                |                              |  |                                     |          |                         |                     |                                    |
| pstream Adj Ramp                              |                                  | Terrain: Level                |                                |                              |  |                                     |          |                         | Downstrea<br>Ramp   | am Adj                             |
| Yes 🗹 On                                      |                                  |                               |                                |                              |  |                                     |          |                         | ☐ Yes               | □ On                               |
| No ☐ Off                                      |                                  |                               |                                |                              |  |                                     |          |                         | ✓ No                | ☐ Off                              |
| up = 2035 f                                   | t                                |                               |                                |                              |  |                                     |          |                         | L <sub>down</sub> = | ft                                 |
|   |                                  | S                             | $_{\rm F} = 56.0 \; {\rm mph}$ |                              | $S_{FR} = 4$                                     | 0.0 mph                             |          |                         | V <sub>D</sub> =    | veh/h                              |
| u = 400  ve                                   | en/n                             |                               | Sketch (s                      | show lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$                              |                                     |          |                         | v D —               | VC11/11                            |
| Conversion to                                 | pc/h Und                         | der Base C                    | onditions                      |                              |  |                                     |          |                         |                     |                                    |
| (pc/h)  | V<br>(Veh/hr)                    | PHF                           | Terrain                        | %Truck                       | %Rv  | f <sub>HV</sub>                     |          | f <sub>p</sub>          | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| reeway  | 4800                             | 0.92                          | Level                          | 2                            | 0  | 0.990                               |          | 1.00                    | Ę                   | 5270                               |
| Ramp  | 490                              | 0.93                          | Level                          | 5                            | 0  | 0.976                               | Т        | 1.00                    |                     | 540                                |
| JpStream                                      | 400                              | 0.93                          | Level                          | 3                            | 0  | 0.985                               |          | 1.00                    |                     | 437                                |
| DownStream                                    |                                  |                               |                                |                              |  |                                     |          |                         |                     |                                    |
|   |                                  | Merge Areas                   |                                |                              |  |                                     |          | erge Areas              |                     |                                    |
| stimation of                                  | v <sub>12</sub>                  |                               |                                |                              | Estimati   | on of v                             | 12       |                         |                     |                                    |
|   | V <sub>12</sub> = V <sub>F</sub> | (P <sub>EM</sub> )            |                                |                              |  | ١.                                  | / _ \/   | . (\/_\/                | \D                  |                                    |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)     |                                  |                               |                                |                              |  | v                                   |          | + (V <sub>F</sub> - V   |                     |                                    |
|   |                                  |                               |                                |                              | L <sub>EQ</sub> =                                |                                     |          | -                       | 5-8 or 25-9         |                                    |
| FM =  |                                  |                               | on (Exhibit 25-5)              |                              | P <sub>FD</sub> = using Equation (Exhibit 25-12) |                                     |          |                         |                     |                                    |
| 12 =  | 3176                             |                               | 05.4.05                        |                              | V <sub>12</sub> =                                |                                     | pc/      | h                       |                     |                                    |
| 3 or V <sub>av34</sub>                        | 2094  <br>5)                     | pc/h (Equatio                 | n 25-4 or 25-                  |                              | $V_3$ or $V_{av34}$                              |                                     | pc/l     | h (Equation             | 25-15 or 25         | -16)                               |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,700 | ,                                | s V No                        |                                |                              | Is V <sub>3</sub> or V <sub>av3</sub>            | <sub>4</sub> > 2,700 p              | c/h? 🥅 ነ | ′es □ No                | )                   |                                    |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5 * |                                  |                               |                                |                              | Is V <sub>3</sub> or V <sub>av3</sub>            | <sub>4</sub> > 1.5 * V <sub>1</sub> | 2/2 □ \  | ′es                     | )                   |                                    |
|   | · <del>-</del>                   |                               | 0)                             |                              | If Yes, $V_{12a}$ = pc/h (Equation 25-18)        |                                     |          |                         |                     |                                    |
| Yes,V <sub>12a</sub> =                        |                                  | (Equation 25-                 | 0)                             |                              | 120  |                                     |          | ( 1                     | ,                   |                                    |
| Capacity Che                                  |                                  | 1                             |                                | I                            | Capacity   | 1                                   |          |                         |                     | 1                                  |
|   | Actual                           | Ca                            | pacity                         | LOS F?                       | 1  | P                                   | ctual    |                         | pacity              | LOS F                              |
|   |                                  |                               |                                |                              | V <sub>F</sub>                                   |                                     |          | Exhibit 25-             | 14                  |                                    |
| $V_{FO}$                                      | 5810                             | Exhibit 25-7                  |                                | No                           | $V_{FO} = V_{F}$                                 | - V <sub>R</sub>                    |          | Exhibit 25-             | 14                  |                                    |
|   |                                  |                               |                                |                              | V <sub>R</sub>                                   |                                     |          | Exhibit 25              | -3                  |                                    |
| low Entering                                  | Merge In                         | fluence Ar                    | <u></u>                        | <u>, ,</u>                   | Flow En  | terina l                            | Divera   | e Influe                | nce Are             | <del>'</del><br>a                  |
|   | Actual                           | 1                             | esirable                       | Violation?                   |  | Actua                               |          | Max Desi                |                     | Violation                          |
| V <sub>R12</sub>                              | 3716                             | Exhibit 25-7                  | 4600:All                       | No                           | V <sub>12</sub>                                  | 1                                   |          | nibit 25-14             |                     |                                    |
| evel of Servi                                 |                                  |                               |                                | L                            | Level of   | Service                             |          |                         | on (if no           | <i>t F</i> )                       |
|   |                                  | 0.0078 V <sub>12</sub> - 0.00 |                                |                              |  |                                     |          | )86 V <sub>12</sub> - ( | _ •                 | ,                                  |
|   |                                  | 0.0070 v <sub>12</sub> - 0.00 | ,02, LA                        |                              |  |                                     | ∠ + 0.00 | ,00 v <sub>12</sub> - ( | J.009 LD            |                                    |
| D <sub>R</sub> = 28.6 (pc/mi/ln)              |                                  |                               |                                |                              | c/mi/ln)   |                                     |          |                         |                     |                                    |
| OS = D (Exhib                                 | •                                |                               |                                |                              |  | xhibit 25-                          |          |                         |                     |                                    |
| Speed Detern                                  | nination                         |                               |                                |                              | Speed D  | etermii                             | nation   |                         |                     |                                    |
| l <sub>S</sub> = 0.409 (Exik                  | <br>oit 25-19)                   |                               |                                |                              | $D_s = (E_s)$                                    | xhibit 25-19                        | )        |                         |                     |                                    |
| _   | Exhibit 25-19)                   |                               |                                |                              |  | h (Exhibit 2                        | 25-19)   |                         |                     |                                    |
|   |                                  |                               |                                |                              |  | oh (Exhibit 2                       |          |                         |                     |                                    |
| S <sub>0</sub> = 50.3 mph (Exhibit 25-19)     |                                  |                               |                                | I 0 ""                       | . ,  | ,                                   |          |                         |                     |                                    |
|   | S = 50.3 mph (Exhibit 25-14)     |                               |                                |                              | S = mr   | h (Exhibit 2                        | 05-15\   |                         |                     |                                    |

|  |                                    | MPS AND                      |   |  |   | · <del>-</del> ·                                       |                   |  |                                       |
|--|------------------------------------|------------------------------|---|--|---|--|-------------------|--|---------------------------------------|
| General Info   | rmation                            |                              |   | Site Infor   | mation  |  |                   |  |                                       |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric | 9/08/                              | 2011                         | Ju<br>Ju  | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | E<br>N  | Southbound I-Exit 5 SB On-F<br>NYSDOT<br>2036 No-Build |                   |  |                                       |
| Project Description  |                                    |                              |   | -  |   |  |                   |  |                                       |
| Inputs   |                                    |                              |   |  |   |  |                   |  |                                       |
| Jpstream Adj Ram   |                                    | Terrain: Level               |   |  |   |  |                   | Downstr<br>Ramp                                | eam Adj                               |
| Yes O  |                                    |                              |   |  |   |  |                   | ✓ Yes  | ✓ On                                  |
| ▼ No   | ff                                 |                              |   |  |   |  |                   | □ No   | ☐ Off                                 |
| <sub>up</sub> = ft   | _                                  | S                            | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$ |  |   |  |                   | L <sub>down</sub> =                            | 2035 ft                               |
| / <sub>u</sub> = veh/  | h                                  |                              | Sketch (s   | show lanes, L <sub>A</sub> ,                           | $L_{D'}V_{R'}V_{f}$                             |  |                   | V <sub>D</sub> =                               | 490 veh/h                             |
| Conversion   | to pc/h Und                        | der Base C                   | Conditions  |  |   |  |                   |  |                                       |
| (pc/h)   | V<br>(Veh/hr)                      | PHF                          | Terrain   | %Truck   | %Rv   | f <sub>HV</sub>  | fp                | v = V/PH                                       | IF x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 4550                               | 0.92                         | Level   | 2  | 0   | 0.990  | 1.00              |  | 4995                                  |
| Ramp   | 400                                | 0.93                         | Level   | 3  | 0   | 0.985  | 1.00              |  | 437                                   |
| UpStream<br>DownStream   | 400                                | 0.02                         | Lovel   |  |   | 0.07/  | 1.00              |  | E40                                   |
| Downstream   | 490                                | 0.93 Merge Areas             | Level   | 5  | 0   | 0.976  | 1.00<br>Diverge A | rass   | 540                                   |
| Estimation of v <sub>12</sub>  |                                    |                              |   |  | Estimati  | on of v <sub>12</sub>                                  | Diverge F         | ircus  |                                       |
|  |                                    | (D )                         |   |  |   |  |                   |  |                                       |
|  | $V_{12} = V_F$                     |                              | OF 3)   |  |   | V <sub>12</sub>  |                   | <sub>F</sub> - V <sub>R</sub> )P <sub>FD</sub> |                                       |
| -EQ =  |                                    | ation 25-2 or                |   |  | L <sub>EQ</sub> =                               |  |                   | on 25-8 or 25                                  |                                       |
| ) <sub>FM</sub> =  |                                    |                              | on (Exhibit 25-5)                                       |  | P <sub>FD</sub> =                               |  | using E           | quation (Exhib                                 | it 25-12)                             |
| / <sub>12</sub> =  | 3010                               |                              | 05.4.05   |  | V <sub>12</sub> =                               |  | pc/h              |  |                                       |
| $V_3$ or $V_{av34}$  | 1985  <br><b>5</b> )               | pc/h (Equatio                | n 25-4 or 25-   |  | $V_3$ or $V_{av34}$                             |  | pc/h (Equ         | ation 25-15 or 2                               | 25-16)                                |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                         | ,                                  | s 🔽 No                       |   |  | Is V <sub>3</sub> or V <sub>av3</sub>           | 4 > 2,700 pc/h   | ? ☐ Yes I         | No   |                                       |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                         |                                    |                              |   |  | Is V <sub>3</sub> or V <sub>av3</sub>           | <sub>4</sub> > 1.5 * V <sub>12</sub> /2                | ☐ Yes I           | No   |                                       |
| f Yes,V <sub>12a</sub> =   | :=                                 | Equation 25                  | -8)   |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |  |                   |  |                                       |
| Capacity Ch  |                                    | (Equation Eo                 | <u> </u>  |  | Canacity  | / Checks   |                   |  |                                       |
| supuony on   | Actual                             | l Ca                         | pacity  | LOS F?   | Gapaon  | Actu   | ıal I             | Capacity                                       | LOS F                                 |
|  | 7101001                            | Ť                            | .puony  | 20011  | V <sub>F</sub>                                  | 7.0.0  |                   | oit 25-14                                      | 2001                                  |
| $V_{FO}$   | 5432                               | Exhibit 25-7                 |   | No   | $V_{FO} = V_F$                                  | · V_   |                   | oit 25-14                                      |                                       |
| *FO  | 3432                               | LATIIDIT 23-7                |   | INO  |   | *R   | _                 |  |                                       |
|  | <u> </u>                           | <u> </u>                     |   |  | V <sub>R</sub>                                  | <u> </u>   |                   | oit 25-3                                       |                                       |
| Flow Enterin   |                                    |                              |   | Violation?   | Flow En   |  |                   | fluence Are                                    |                                       |
| V  | Actual<br>3447                     | Exhibit 25-7                 | Desirable<br>4600:All                                   | Violation?<br>No                                       | V <sub>12</sub>                                 | Actual   | Exhibit 2         | Desirable                                      | Violation?                            |
| V <sub>R12</sub>   |                                    |                              |   | INU  |   | Somiac   |                   |  | ot E)                                 |
| Level of Ser   |                                    |                              |   |  |   |  |                   | nation (if n                                   | υι <i>Γ)</i>                          |
| ••   | + 0.00734 v <sub>R</sub> + (       | 0.0010 V <sub>12</sub> - 0.0 | JUZI LA   |  |   |  | r U.UU86 V        | <sub>12</sub> - 0.009 L <sub>D</sub>           |                                       |
| D <sub>R</sub> = 26.5 (pc/mi/ln)                                     |                                    |                              |   |  |   | c/mi/ln)   |                   |  |                                       |
|  | ibit 25-4)                         |                              |   |  |   | xhibit 25-4)   | 41                |  |                                       |
| Speed Deter  |                                    |                              |   |  | <del>' '</del>                                  | etermina   | τιοπ              |  |                                       |
| $M_{\rm S} = 0.371  (E)$   | kibit 25-19)                       |                              |   |  | 3   | (hibit 25-19)  |                   |  |                                       |
| S <sub>R</sub> = 50.8 mph (Exhibit 25-19)                            |                                    |                              |   |  | $S_R = mp$                                      | h (Exhibit 25-   |                   |  |                                       |
|  |                                    |                              |   |  |   |  |                   |  |                                       |
| $S_0 = 50.7 \text{ mph}$   | (Exhibit 25-19)<br>(Exhibit 25-14) |                              |   |  | $S_0 = mp$                                      | h (Exhibit 25-   | 19)               |  |                                       |

|                                     |   |                             | FREEWA                | Y WEAV     | /ING WOR                                       | KSHEE  | Т             |                 |              |
|-------------------------------------|---|-----------------------------|-----------------------|------------|--|--|---------------|-----------------|--------------|
| Genera                              | l Informat  | ion                         |                       |            | Site Information                               |  |               |                 |              |
| Date Perfor                         | nalyst SEB gency/Company CHA ate Performed 9/08/2011 nalysis Time Period AM |                             |                       |            | Weaving Seg<br>Jurisdiction                    | Freeway/Dir of Travel Weaving Seg Location Jurisdiction Analysis Year  I-87 Northbound Exit 2E on to 2V NYSDOT 2036 No-Build |               |                 | f            |
| Inputs                              |   |                             |                       |            |  |  |               |                 |              |
| Weaving nu<br>Weaving se<br>Terrain | ee-flow speed, sumber of lanes, eg length, L (ft)                           | N                           | 56<br>4<br>815<br>Lev | el         | Weaving type<br>Volume ratio,<br>Weaving ratio | VR   |               | A<br>0.3<br>0.3 |              |
| Conver                              | sions to p  | c/h Unde                    | er Base C             | onditio    |  |  |               | ,               | _            |
| (pc/h)                              | V   | PHF                         | Truck %               | RV %       | E <sub>T</sub>                                 | E <sub>R</sub>   | $f_{HV}$      | fp              | V            |
| $V_{o1}$                            | 2290  | 0.92                        | 2                     | 0          | 1.5  | 1.2  | 0.990         | 1.00            | 2514         |
| $V_{o2}$                            | 0   | 0.92                        | 2                     | 0          | 1.5  | 1.2  | 0.990         | 1.00            | 0            |
| $V_{w1}$                            | 700   | 0.92                        | 2                     | 0          | 1.5  | 1.2  | 0.990         | 1.00            | 768          |
| $V_{w2}$                            | 310   | 0.92                        | 2                     | 0          | 1.5  | 1.2  | 0.990         | 1.00            | 340          |
| V <sub>w</sub>                      |   |                             |                       | 1108       | V <sub>nw</sub>                                |  |               |                 | 2514         |
| V                                   | 7   |                             |                       |            | TIW  |  |               |                 | 3622         |
| Weavin                              | g and No  | n-Weavin                    | a Speeds              | <br>S      |  |  |               |                 |              |
|                                     |   |                             | Unconstr              |            |  |  | Cons          | trained         |              |
|                                     |   | Weaving                     | (i = w)               | Non-Wea    | aving (i = nw)                                 |  | ng (i = w)    | 1               | ving ( = nw) |
| a (Exhibit 2                        |   | ļ                           |                       | <u> </u>   |  |  | 35<br>20      | <del>}</del>    | 020          |
| b (Exhibit 2<br>c (Exhibit 2        |   |                             |                       | <u> </u>   |  |  | 97            | <del>}</del>    | 00<br>30     |
| d (Exhibit 2                        |   |                             |                       | 1          |  |  | 80            |                 | 75           |
| Weaving intens                      | sity factor, Wi   |                             |                       |            |  |  | 18            | 4               | 27           |
| Weaving and n<br>speeds, Si (mi/    |   |                             |                       |            |  | 29   | .47           | 51              | .33          |
| Number of I                         | lanes required  |                             | ned operation,        | Nw         | 1.46   |  |               | Į.              |              |
| 1                                   | number of lanes   |                             |                       | _          | 1.40   |  |               |                 |              |
|                                     | If Nw < Nw  | <u> </u>                    |                       |            |  |  | v (max) const | rained operati  | on           |
|                                     | g Segmer<br>egment speed,   |                             | Density,              |            | f Service,                                     | and Cap  | acity         |                 |              |
|                                     | · .   |                             |                       | 41.83      |  |  |               |                 |              |
| weaving se                          | egment density,   | υ (pc/mi/ln)                |                       | 21.64<br>C |  |  |               |                 |              |
|                                     |   | c (nc/h)                    |                       |            |  |  |               |                 |              |
| ļ                                   | base condition a 15-minute fl   | ь                           | h/h)                  | 6154       |  |  |               |                 |              |
| <u> </u>                            | a full-hour vol   |                             |                       | 6093       |  |  |               |                 |              |
|                                     | a iuii-iiuui VUI  | unie, c <sub>h</sub> (ven/i | <i>y</i>              | 5606       |  |  |               |                 |              |
| Notes                               |   |                             |                       |            |  |  |               |                 |              |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|                                     |  |  | FREEWA                | Y WEAV   | ING WOR   | KSHEE          | Τ               |   |              |  |
|-------------------------------------|--|--|-----------------------|----------|---|----------------|-----------------|---|--------------|--|
| General                             | Informat   | ion  |                       |          | Site Information                                  |                |                 |   |              |  |
| Date Perfori                        | gency/Company CHA ate Performed 9/08/2011 nalysis Time Period AM   |  |                       |          | Weaving Seg Location Exit 2V<br>Jurisdiction NYSD |                |                 | Southbound<br>W on to 2E off<br>DOT<br>No-Build |              |  |
| Inputs                              |  |  |                       |          |   |                |                 |   |              |  |
| Weaving nu<br>Weaving se<br>Terrain | e-flow speed, and the speed, and the speed a | N  | 56<br>4<br>810<br>Lev | el       | Weaving type<br>Volume ratio<br>Weaving ratio     | , VR           |                 | A<br>0.2<br>0.3                                 |              |  |
| Convers                             | sions to p   | c/h Unde                                     | r Base C              | ondition |   | r              |                 | 1   |              |  |
| (pc/h)                              | V  | PHF  | Truck %               | RV %     | E <sub>T</sub>                                    | E <sub>R</sub> | f <sub>HV</sub> | fp  | V            |  |
| $V_{o1}$                            | 3740   | 0.92   | 2                     | 0        | 1.5   | 1.2            | 0.990           | 1.00  | 4105         |  |
| $V_{o2}$                            | 0  | 0.92   | 2                     | 0        | 1.5   | 1.2            | 0.990           | 1.00  | 0            |  |
| $V_{w1}$                            | 810  | 0.92   | 2                     | 0        | 1.5   | 1.2            | 0.990           | 1.00  | 889          |  |
| $V_{w2}$                            | 360  | 0.92   | 2                     | 0        | 1.5   | 1.2            | 0.990           | 1.00  | 395          |  |
| V <sub>w</sub>                      | 1  | •  | •                     | 1284     | $V_{nw}$  |                | •               | •   | 4105         |  |
| V                                   | 7  |  |                       |          | ,   | ı              |                 |   | 5389         |  |
| Weaving                             | g and No   | n-Weavin                                     | g Speeds              | 3        |   |                |                 |   |              |  |
|                                     |  |  | Unconstr              | 4        |   |                |                 | trained   |              |  |
| - /Fhihik 0./                       | 1.()   | Weaving                                      |                       |          | ving (i = nw)                                     | Weavir         | ng (i = w)      | Non-Wea   | ving ( = nw) |  |
| a (Exhibit 24<br>b (Exhibit 24      |  | 0.15<br>2.20                                 |                       |          | .00   |                |                 | -   |              |  |
| c (Exhibit 24                       |  | 0.97   |                       |          | .30   |                |                 |   |              |  |
| d (Exhibit 24                       |  | 0.80   |                       |          | .75   |                |                 |   |              |  |
| Weaving intensi                     |  | 1.23   | }                     | 0.       | .63   |                |                 |   |              |  |
| Weaving and no<br>speeds, Si (mi/h  |  | 35.6   | 5                     | 43       | 3.15  |                |                 |   |              |  |
| Number of la<br>Maximum n           | anes required<br>umber of lanes  | , ,  | •                     |          | 1.31<br>1.40                                      |                |                 |   |              |  |
|                                     |  | (max) uncons                                 |                       |          |   |                | v (max) constr  | rained operat                                   | ion          |  |
|                                     |  |  |                       |          | f Service,  | and Cap        | acity           |   |              |  |
|                                     |  | S (mi/h)                                     |                       | 41.09    |   |                |                 |   |              |  |
|                                     | gment density  | , D (pc/mi/ln)                               |                       | 32.79    |   |                |                 |   |              |  |
| Level of ser                        |  | ) o (no/h)                                   |                       | D        |   |                |                 |   |              |  |
|                                     | base condition   | <u>.                                    </u> | - /I-\                | 6524     |   |                |                 |   |              |  |
|                                     |  | ow rate, c (veh                              |                       | 6459     |   |                |                 |   |              |  |
|                                     | a iuii-nour vol  | ume, c <sub>h</sub> (veh/h                   | )                     | 5942     |   |                |                 |   |              |  |
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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

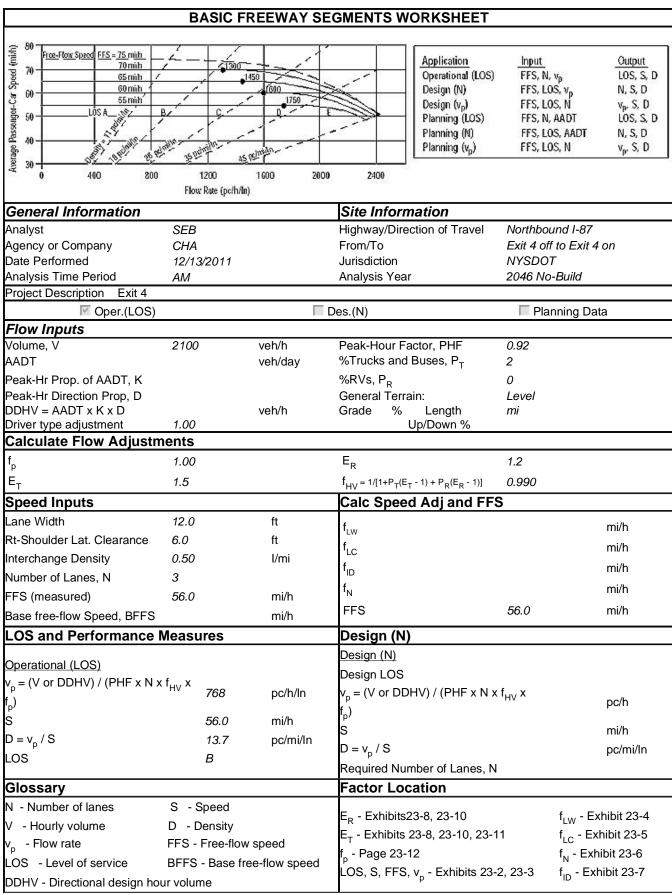
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

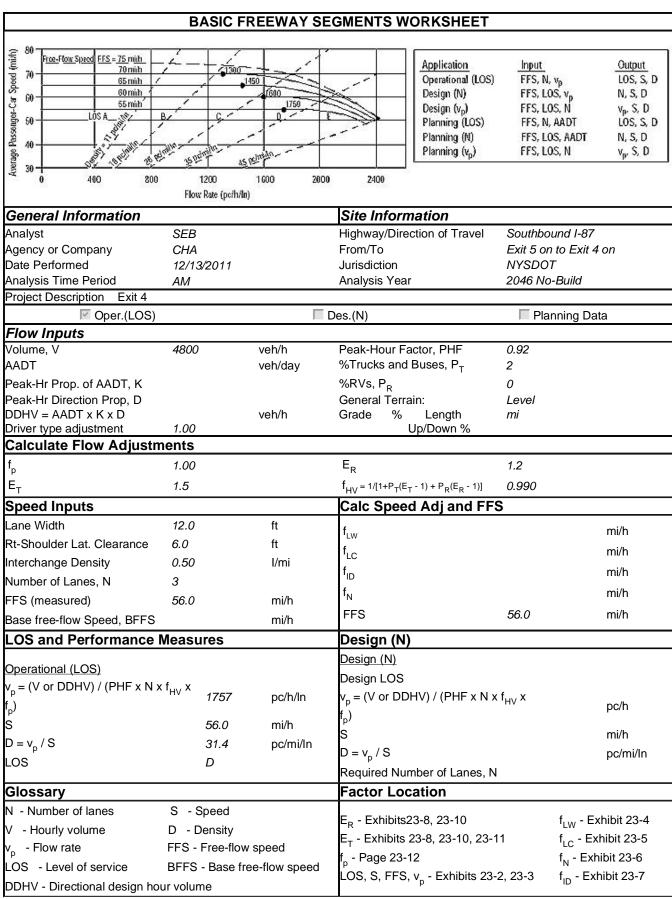
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such



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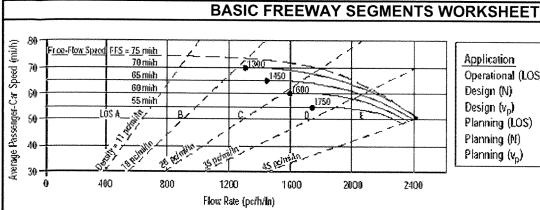
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| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> . S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N. S. D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> , S, D |

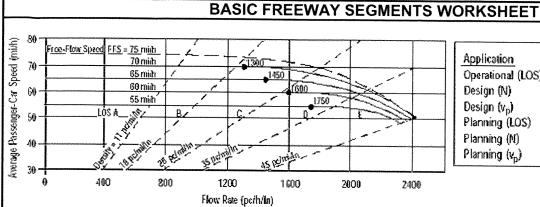
|  | Flow Rate (pc/h/l       | п)           |   |           |                                |
|--|-------------------------|--------------|---|-----------|--------------------------------|
| General Information                              |                         |              | Site Information                                      |           |                                |
| Analyst  | SEB                     |              | Highway/Direction of Travel                           | Northbo   | und I-87                       |
| Agency or Company                                | CHA                     |              | From/To   | Exit 2 to | Exit 4                         |
| Date Performed                                   | 6/22/2011               |              | Jurisdiction  | NYSDO     | Τ                              |
| Analysis Time Period                             | PM                      |              | Analysis Year   | 2016 No   | -Build                         |
| Project Description Exit 4                       |                         |              |   |           |                                |
| ☑ Oper.(LOS)                                     | )                       |              | Des.(N)   | □ Pla     | nning Data                     |
| Flow Inputs                                      | E400                    |              |   |           |                                |
| Volume, V<br>AADT                                | 5100                    | veh/h        | Peak-Hour Factor, PHF                                 | 0.86      |                                |
|  |                         | veh/day      | %Trucks and Buses, P <sub>T</sub>                     | 2         |                                |
| Peak-Hr Prop. of AADT, K                         |                         |              | %RVs, P <sub>R</sub>                                  | 0         |                                |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D |                         | veh/h        | General Terrain:<br>Grade % Length                    | Level     |                                |
| Driver type adjustment                           | 1.00                    | VEII/II      | Grade % Length<br>Up/Down %                           | mi        |                                |
| Calculate Flow Adjusti                           |                         |              | ор/20111 /0   |           |                                |
| $f_p$  | 1.00                    |              | E <sub>R</sub>  | 1.2       |                                |
| E <sub>T</sub>                                   | 1.5                     |              | $f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]$        | 0.990     |                                |
| Speed Inputs                                     |                         |              | Calc Speed Adj and FF                                 | S         |                                |
| Lane Width                                       | 12.0                    | ft           | f <sub>LW</sub>                                       |           | mi/h                           |
| Rt-Shoulder Lat. Clearance                       | 6.0                     | ft           | 1_  |           |                                |
| Interchange Density                              | 0.50                    | l/mi         | f <sub>LC</sub>                                       |           | mi/h                           |
| Number of Lanes, N                               | 3                       |              | f <sub>ID</sub>                                       |           | mi/h                           |
| FFS (measured)                                   | 56.0                    | mi/h         | f <sub>N</sub>  |           | mi/h                           |
| Base free-flow Speed, BFFS                       |                         | mi/h         | FFS   | 56.0      | mi/h                           |
| LOS and Performance                              | Measures                |              | Design (N)  |           |                                |
| Operational (LOS)                                |                         |              | Design (N)  |           |                                |
|  | v f                     |              | Design LOS  |           |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$          | <sup>^ 'HV ^</sup> 1997 | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF \times N \times N)$ | :f⊔v x    |                                |
| f <sub>p</sub> )                                 |                         |              | $f_p$ )   | 110       | pc/h                           |
| S  | 55.0                    | mi/h         | S S   |           | mi/h                           |
| $D = v_p / S$                                    | 36.3                    | pc/mi/ln     | D = v <sub>p</sub> / S                                |           |                                |
| LOS  | E                       |              | Required Number of Lanes, N                           |           | pc/mi/ln                       |
| Glossary   |                         |              | Factor Location                                       |           |                                |
| N - Number of lanes                              | S - Speed               |              |   |           |                                |
| V - Hourly volume                                | D - Density             |              | E <sub>R</sub> - Exhibits23-8, 23-10                  |           | f <sub>LW</sub> - Exhibit 23-4 |
| v <sub>n</sub> - Flow rate                       | FFS - Free-flow         | v sneed      | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1           | 1         | f <sub>LC</sub> - Exhibit 23-5 |
| LOS - Level of service                           |                         |              | f <sub>p</sub> - Page 23-12                           |           | f <sub>N</sub> - Exhibit 23-6  |
|  | BFFS - Base fro         | ee-now speed | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-            | 2, 23-3   | f <sub>ID</sub> - Exhibit 23-7 |
| DDHV - Directional design ho                     | ur volume               | •            | 1   |           | IU                             |

## **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mi/h) Froe-Flow Spred FFS = 75 midt 70 midi 70 65 midt 60 midt 60 55 minh 30 400 0081200 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, V <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | V <sub>D</sub> , S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (N)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | V <sub>D</sub> , S, D |

| General Information                           |                          |          | Site Information                             |                     |                                |
|---|--------------------------|----------|--|---------------------|--------------------------------|
| Analyst                                       | SEB                      |          | Highway/Direction of Travel                  | Southbo             | und I-87                       |
| Agency or Company                             | CHA                      |          | From/To                                      | Exit 4 to           | Exit 2                         |
| Date Performed                                | 6/22/2011                |          | Jurisdiction                                 | NYSDO               | Τ                              |
| Analysis Time Period                          | PM                       |          | Analysis Year                                | 2016 No             | -Build                         |
| Project Description Exit 4                    |                          |          |  |                     |                                |
| ✓ Oper.(LOS)                                  |                          |          | Des.(N)                                      | □ Pla               | nning Data                     |
| Flow Inputs                                   | 0.050                    |          |  |                     |                                |
| Volume, V                                     | 3850                     | veh/h    | Peak-Hour Factor, PHF                        | 0.92                |                                |
| AADT  |                          | veh/day  | %Trucks and Buses, $P_T$                     | 2                   |                                |
| Peak-Hr Prop. of AADT, K                      |                          |          | %RVs, P <sub>R</sub>                         | 0                   |                                |
| Peak-Hr Direction Prop, D                     |                          |          | General Terrain:                             | Level               |                                |
| DDHV = AADT x K x D<br>Driver type adjustment | 1.00                     | veh/h    | Grade % Length<br>Up/Down %                  | mi                  |                                |
| Calculate Flow Adjustn                        |                          |          | Ор/Домп %                                    |                     |                                |
|   | 1.00                     |          | E  | 1.2                 |                                |
| f <sub>p</sub>                                |                          |          | E <sub>R</sub>                               |                     |                                |
| E <sub>T</sub>                                | 1.5                      |          | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990               |                                |
| Speed Inputs                                  |                          |          | Calc Speed Adj and FF                        | S                   |                                |
| Lane Width                                    | 12.0                     | ft       | $f_{LW}$                                     |                     | mi/h                           |
| Rt-Shoulder Lat. Clearance                    | 6.0                      | ft       | f <sub>LC</sub>                              |                     | mi/h                           |
| Interchange Density                           | 0.50                     | l/mi     |  |                     |                                |
| Number of Lanes, N                            | 3                        |          | f <sub>ID</sub>                              |                     | mi/h                           |
| FFS (measured)                                | 56.0                     | mi/h     | f <sub>N</sub>                               |                     | mi/h                           |
| Base free-flow Speed, BFFS                    |                          | mi/h     | FFS  | 56.0                | mi/h                           |
| LOS and Performance I                         | Measures                 |          | Design (N)                                   |                     |                                |
|   |                          |          | Design (N)                                   |                     |                                |
| Operational (LOS)                             |                          |          | Design LOS                                   |                     |                                |
| v <sub>p</sub> = (V or DDHV) / (PHF x N x     | ( f <sub>HV</sub> x 1409 | no/h/ln  | <u> </u>                                     | , f v               |                                |
| f <sub>p</sub> )                              | 1409                     | pc/h/ln  | $v_p = (V \text{ or DDHV}) / (PHF x N x)$    | K I <sub>HV</sub> X | pc/h                           |
| S<br>S  | 56.0                     | mi/h     | (p)  |                     | ·                              |
| $D = v_p / S$                                 | 25.2                     | pc/mi/ln | S  |                     | mi/h                           |
| LOS   | C                        | l        | $D = v_p / S$                                |                     | pc/mi/ln                       |
|   |                          |          | Required Number of Lanes, N                  | <b>I</b>            |                                |
| Glossary                                      |                          |          | Factor Location                              |                     |                                |
| N - Number of lanes                           | S - Speed                |          | E Evhibito 22.0.22.40                        |                     | £ 5.555.00 A                   |
| V - Hourly volume                             | D - Density              |          | E <sub>R</sub> - Exhibits23-8, 23-10         |                     | f <sub>LW</sub> - Exhibit 23-4 |
| v <sub>p</sub> - Flow rate                    | FFS - Free-flow          | / speed  | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1  | 11                  | f <sub>LC</sub> - Exhibit 23-5 |
| LOS - Level of service                        | BFFS - Base fr           |          | f <sub>p</sub> - Page 23-12                  |                     | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design hou                 |                          | opood    | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | -2, 23-3            | f <sub>ID</sub> - Exhibit 23-7 |

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| <u>Application</u>         | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>n</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | V <sub>D</sub> . S. D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>n</sub> ) | FFS, LOS, N              | v <sub>p</sub> , S, D |

|  | How Rate (pc/h/l    | n)           |  |                   |                                |
|--|---------------------|--------------|--|-------------------|--------------------------------|
| General Information                              |                     |              | Site Information                             |                   |                                |
| Analyst  | SEB                 |              | Highway/Direction of Travel                  | Northbe           | ound I-87                      |
| Agency or Company                                | CHA                 |              | From/To                                      |                   | off to Exit 4 on               |
| Date Performed                                   | 9/09/2011           |              | Jurisdiction                                 | NYSDO             |                                |
| Analysis Time Period                             | PM                  |              | Analysis Year                                | 2016 N            | lo-Build                       |
| Project Description Exit 4                       |                     |              |  |                   |                                |
| ☑ Oper.(LOS                                      | )                   |              | Des.(N)                                      | □PI               | anning Data                    |
| Flow Inputs                                      |                     |              |  |                   |                                |
| Volume, V  | 4500                | veh/h        | Peak-Hour Factor, PHF                        | 0.86              |                                |
| AADT   |                     | veh/day      | %Trucks and Buses, P <sub>T</sub>            | 2                 |                                |
| Peak-Hr Prop. of AADT, K                         |                     |              | %RVs, P <sub>R</sub>                         | 0                 |                                |
| Peak-Hr Direction Prop, D                        |                     |              | General Terrain:                             | Level             |                                |
| DDHV = AADT x K x D                              | 1.00                | veh/h        | Grade % Length                               | mi                |                                |
| Driver type adjustment<br>Calculate Flow Adjusti | 1.00                |              | Up/Down %                                    |                   |                                |
|  |                     |              |  |                   |                                |
| f <sub>p</sub>                                   | 1.00                |              | E <sub>R</sub>                               | 1.2               |                                |
| E <sub>T</sub>                                   | 1.5                 |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990             |                                |
| Speed Inputs                                     |                     |              | Calc Speed Adj and FF                        | S                 |                                |
| Lane Width                                       | 12.0                | ft           | f <sub>LW</sub>                              |                   | mai/la                         |
| Rt-Shoulder Lat. Clearance                       | 6.0                 | ft           |  |                   | mi/h                           |
| Interchange Density                              | 0.50                | l/mi         | fLC  |                   | mi/h                           |
| Number of Lanes, N                               | 3                   |              | f <sub>ID</sub>                              |                   | mi/h                           |
| FFS (measured)                                   | 56.0                | mi/h         | $f_N$  |                   | mi/h                           |
| Base free-flow Speed, BFFS                       |                     | mi/h         | FFS  | 56.0              | mi/h                           |
| LOS and Performance                              |                     |              | Design (N)                                   |                   |                                |
|  |                     |              | Design (N)                                   |                   |                                |
| Operational (LOS)                                |                     |              |  |                   |                                |
| $V_p = (V \text{ or DDHV}) / (PHF \times N)$     | x f <sub>HV</sub> x | a a          | Design LOS                                   | _                 |                                |
| (p)  | 1762                | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF x N x)$    | f <sub>HV</sub> x | pc/h                           |
| 5  | 56.0                | mi/h         | f <sub>p</sub> )                             |                   | ролі                           |
| $D = v_p / S$                                    | 31.5                | pc/mi/ln     | s  |                   | mi/h                           |
| .OS  | 51.5<br>D           | pomini       | $D = v_p / S$                                |                   | pc/mi/ln                       |
| -00  | D                   |              | Required Number of Lanes, N                  |                   | •                              |
| Glossary   |                     | ***          | Factor Location                              |                   |                                |
| N - Number of lanes                              | S - Speed           |              |  |                   |                                |
| / - Hourly volume                                | D - Density         |              | E <sub>R</sub> - Exhibits23-8, 23-10         |                   | f <sub>LW</sub> - Exhibit 23-4 |
| , - Flow rate                                    | FFS - Free-flow     | speed        | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1  | 1                 | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                            | BFFS - Base fre     | •            | f <sub>p</sub> - Page 23-12                  |                   | f <sub>N</sub> - Exhibit 23-6  |
|  |                     | se-now speed | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-2  | 2, 23-3           | f <sub>ID</sub> - Exhibit 23-7 |
| DDHV - Directional design ho                     | ur volume           |              | L P  |                   | יטו                            |

### **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mi/h) Free-Flow Speed FFS = 75 mids Application Input Output 70 mish 70 Operational (LOS) FFS, N, vo 65 mish LOS, S, D 60 miih Design (N) FFS, LOS, vn N, S, D 60 55 min Design (v<sub>o</sub>) FFS, LOS, N v<sub>p</sub>, S, D 50 Planning (LOS) FFS, N, AADT LOS, S. D. Planning (M) FFS, LOS, AADT N, S, D 40 -Planning (v<sub>p</sub>) FFS, LOS, N v<sub>p</sub>. S. D 30 400 200 1200 1600 2000 2400 Flow Rate (pc/h/lin) General Information Site Information Analyst SEB Highway/Direction of Travel Southbound I-87 Agency or Company CHA From/To Exit 5 on to Exit 4 on Date Performed Jurisdiction 12/09/2011 NYSDOT Analysis Time Period PM Analysis Year 2016 No-Build Project Description Exit 4 Oper.(LOS) ☐ Des.(N) Planning Data Flow Inputs Volume, V 2800 Peak-Hour Factor, PHF veh/h 0.92 AADT veh/dav %Trucks and Buses, P<sub>⊤</sub> 2 %RVs, P<sub>R</sub> Peak-Hr Prop. of AADT, K 0 Peak-Hr Direction Prop. D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments 1.00 ER 1.2 $E_{T}$ 1.5 $f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]$ 0.990 Speed Inputs Calc Speed Adj and FFS ane Width 12.0 ft $f_{LW}$ mi/h Rt-Shoulder Lat. Clearance 6.0 ft $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h Number of Lanes, N 3 $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times V_p)$ 1025 pc/h/ln $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ $f_p)$ pc/h 56.0 mi/h mi/h $D = v_n / S$ 18.3 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS C Required Number of Lanes, N Glossary **Factor Location** N - Number of lanes S - Speed E<sub>p</sub> - Exhibits23-8, 23-10 f<sub>IW</sub> - Exhibit 23-4

DDHV - Directional design hour volume

D - Density

FFS - Free-flow speed

BFFS - Base free-flow speed

- Hourly volume

LOS - Level of service

- Flow rate

f<sub>p</sub> - Page 23-12

E<sub>T</sub> - Exhibits 23-8, 23-10, 23-11

LOS, S, FFS, v<sub>n</sub> - Exhibits 23-2, 23-3

f<sub>IC</sub> - Exhibit 23-5

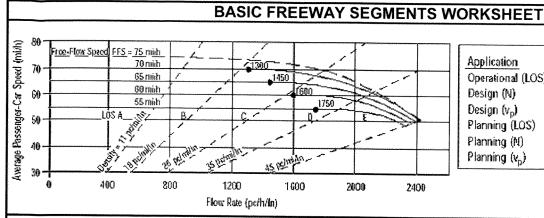
f<sub>N</sub> - Exhibit 23-6

f<sub>ID</sub> - Exhibit 23-7

## **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mi/h) F<u>rce-</u>Flow Sp<u>red</u> FFS = <u>75 mith</u> 70 mith 70 65 midt 60 mith 55 mith 60 50 40 400 800 1200 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>p</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N. S. D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | V <sub>D</sub> . S. D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>n</sub> ) | FFS, LOS, N              | v <sub>p</sub> , S, D |

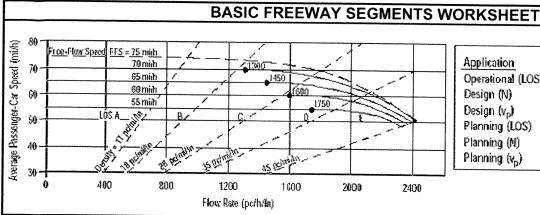
| General Information                          |                          |          | Site Information                             |                   |                                |
|--|--------------------------|----------|--|-------------------|--------------------------------|
| Analyst                                      | SEB                      |          | Highway/Direction of Travel                  | Morth             | ound I-87                      |
| Agency or Company                            | CHA                      |          | From/To                                      |                   | ouna 1-87<br>o Exit 5          |
| Date Performed                               | 6/22/2011                |          | Jurisdiction                                 | NYSD              |                                |
| Analysis Time Period                         | PM                       |          | Analysis Year                                |                   | Io-Build                       |
| Project Description Exit 4                   |                          |          |  | 20,01             | io Balla                       |
| Oper.(LOS                                    | )                        |          | Des.(N)                                      | ПΡ                | lanning Data                   |
| Flow Inputs                                  |                          |          |  |                   |                                |
| Volume, V                                    | 5900                     | veh/h    | Peak-Hour Factor, PHF                        | 0.86              |                                |
| AADT   |                          | veh/day  | %Trucks and Buses, P <sub>T</sub>            | 2                 |                                |
| Peak-Hr Prop. of AADT, K                     |                          |          | %RVs, P <sub>R</sub>                         | 0                 |                                |
| Peak-Hr Direction Prop, D                    |                          |          | General Terrain:                             | Level             |                                |
| DDHV = AADT x K x D                          |                          | veh/h    | Grade % Length                               | mi                |                                |
| Driver type adjustment Calculate Flow Adjust | 1.00                     |          | Up/Down %                                    |                   |                                |
|  |                          |          |  |                   |                                |
| fp   | 1.00                     |          | E <sub>R</sub>                               | 1.2               |                                |
| E <sub>T</sub>                               | 1.5                      |          | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990             |                                |
| Speed Inputs                                 |                          |          | Calc Speed Adj and FF                        | S                 |                                |
| Lane Width                                   | 12.0                     | ft       |  |                   |                                |
| Rt-Shoulder Lat. Clearance                   | 6.0                      | ft       | f <sub>LW</sub>                              |                   | mi/h                           |
| Interchange Density                          | 0.50                     | l/mi     | f <sub>LC</sub>                              |                   | mi/h                           |
| Number of Lanes, N                           | 3                        |          | f <sub>ID</sub>                              |                   | mi/h                           |
| FFS (measured)                               | 56.0                     | mi/h     | f <sub>N</sub>                               |                   | mi/h                           |
| Base free-flow Speed, BFFS                   |                          | mi/h     | FFS  | 56.0              | mi/h                           |
| LOS and Performance                          | Measures                 |          | Design (N)                                   |                   |                                |
| 0  |                          |          | Design (N)                                   |                   |                                |
| Operational (LOS)                            |                          |          | Design LOS                                   |                   |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$      | x f <sub>HV</sub> x 2310 | pc/h/ln  |  |                   |                                |
| (p)  | 2010                     | ролли    | $V_p = (V \text{ or DDHV}) / (PHF x N x)$    | T <sub>HV</sub> X | pc/h                           |
| 6  |                          | mi/h     | $f_p$ )                                      |                   | P                              |
| $D = v_p / S$                                |                          | pc/mi/ln | S  |                   | mi/h                           |
| .os <sup>°</sup>                             | F                        | F        | $D = v_p / S$                                |                   | pc/mi/ln                       |
|  | •                        |          | Required Number of Lanes, N                  |                   |                                |
| Glossary                                     |                          |          | Factor Location                              |                   |                                |
| N - Number of lanes                          | S - Speed                |          | F  |                   |                                |
| / - Hourly volume                            | D - Density              |          | E <sub>R</sub> - Exhibits23-8, 23-10         |                   | f <sub>LW</sub> - Exhibit 23-4 |
| p - Flow rate                                | FFS - Free-flow          | speed    | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1  | 1                 | f <sub>LC</sub> - Exhibit 23-5 |
| .OS - Level of service                       | BFFS - Base fre          | •        | f <sub>p</sub> - Page 23-12                  |                   | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho                 |                          | spood    | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-2  | 2, 23-3           | f <sub>ID</sub> - Exhibit 23-7 |
|  | ai volume                |          | <u> </u>                                     |                   |                                |



| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, V <sub>D</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> . S. D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> , S, D |

| General Information                     |                            |              | Site Information                             |                    |                                |
|---|----------------------------|--------------|--|--------------------|--------------------------------|
| Analyst                                 | SEB                        |              | Highway/Direction of Travel                  | Southh             | ound I-87                      |
| Agency or Company                       | CHA                        |              | From/To                                      | Exit 5 to          |                                |
| Date Performed                          | 6/22/2011                  |              | Jurisdiction                                 | NYSDO              |                                |
| Analysis Time Period                    | PM                         |              | Analysis Year                                | 2016 N             |                                |
| Project Description Exit 4              |                            |              |  |                    | o Dana                         |
| ☑ Oper.(LOS                             | )                          |              | Des.(N)                                      | □ PI               | anning Data                    |
| Flow Inputs                             |                            |              |  |                    |                                |
| Volume, V                               | 2550                       | veh/h        | Peak-Hour Factor, PHF                        | 0.92               |                                |
| AADT                                    |                            | veh/day      | %Trucks and Buses, P <sub>T</sub>            | 2                  |                                |
| Peak-Hr Prop. of AADT, K                |                            |              | %RVs, P <sub>R</sub>                         | 0                  |                                |
| Peak-Hr Direction Prop, D               |                            |              | General Terrain:                             | Level              |                                |
| DDHV = AADT x K x D                     | 4.00                       | veh/h        | Grade % Length                               | mi                 |                                |
| Driver type adjustment                  | 1.00                       |              | Up/Down %                                    |                    |                                |
| Calculate Flow Adjust                   |                            |              | ***************************************      |                    |                                |
| $f_p$                                   | 1.00                       |              | E <sub>R</sub>                               | 1.2                |                                |
| E <sub>T</sub>                          | 1.5                        |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990              |                                |
| Speed Inputs                            |                            |              | Calc Speed Adj and FF                        | S                  |                                |
| _ane Width                              | 12.0                       | ft           | f  |                    |                                |
| Rt-Shoulder Lat. Clearance              | 6.0                        | ft           | f <sub>LW</sub>                              |                    | mi/h                           |
| nterchange Density                      | 0.50                       | I/mi         | f <sub>LC</sub>                              |                    | mi/h                           |
| Number of Lanes, N                      | 3                          |              | f <sub>ID</sub>                              |                    | mi/h                           |
| FFS (measured)                          | 56.0                       | mi/h         | f <sub>N</sub>                               |                    | mi/h                           |
| Base free-flow Speed, BFFS              |                            | mi/h         | FFS  | 56.0               | mi/h                           |
| LOS and Performance                     | Measures                   |              | Design (N)                                   |                    |                                |
|   |                            |              | Design (N)                                   |                    |                                |
| Operational (LOS)                       |                            |              | Design LOS                                   |                    |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$ | x f <sub>HV</sub> x<br>933 | 20/b/ln      |  | ,                  |                                |
| ( <sub>p</sub> )                        | 933                        | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF x N x)$    | (T <sub>HV</sub> X | pc/h                           |
| 3                                       | 56.0                       | mi/h         | $f_p$ )                                      |                    | p 5///                         |
| $D = v_p / S$                           | 16.7                       | pc/mi/ln     | S  |                    | mi/h                           |
| os <sup>°</sup>                         | В                          | p 6////      | $D = v_p / S$                                |                    | pc/mi/ln                       |
|   |                            |              | Required Number of Lanes, N                  |                    |                                |
| Glossary                                |                            |              | Factor Location                              |                    |                                |
| l - Number of lanes                     | S - Speed                  |              | F - F - 1 1 2 00 00 00 00                    |                    | _                              |
| / - Hourly volume                       | D - Density                |              | E <sub>R</sub> - Exhibits23-8, 23-10         |                    | f <sub>LW</sub> - Exhibit 23-4 |
| - Flow rate                             | FFS - Free-flow            | speed        | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1  | 11                 | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                   | BFFS - Base fre            |              | f <sub>p</sub> - Page 23-12                  |                    | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho            |                            | oo now speed | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-2  | 2, 23-3            | f <sub>ID</sub> - Exhibit 23-7 |
| - Directional design no                 | our volume                 |              |  |                    | ,,,                            |

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| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, V <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS. LOS. AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> . S, D |

| General Information                       |                            |              | Site Information                                      |           |                                |  |  |
|---|----------------------------|--------------|---|-----------|--------------------------------|--|--|
| Analyst                                   | SEB                        |              | Highway/Direction of Travel                           | Northbo   | und I-87                       |  |  |
| Agency or Company                         | CHA                        |              | From/To   | Exit 5 to | Exit 6                         |  |  |
| Date Performed                            | 6/22/2011                  |              | Jurisdiction  | NYSDO     | T                              |  |  |
| Analysis Time Period                      | PM                         |              | Analysis Year   | 2016 No   | o-Build                        |  |  |
| Project Description Exit 4                |                            |              |   |           |                                |  |  |
| ✓ Oper.(LOS)                              |                            |              | Des.(N)   | ☐ Pla     | inning Data                    |  |  |
| <b>Flow Inputs</b><br>Volume, V           | 6100                       | vala/la      |   |           |                                |  |  |
| AADT                                      | 0100                       | veh/h        | Peak-Hour Factor, PHF                                 | 0.86      |                                |  |  |
| Peak-Hr Prop. of AADT, K                  |                            | veh/day      | %Trucks and Buses, P <sub>T</sub>                     | 2         |                                |  |  |
| Peak-Hr Direction Prop, D                 |                            |              | %RVs, P <sub>R</sub>                                  | 0         |                                |  |  |
| DDHV = AADT x K x D                       |                            | veh/h        | General Terrain:<br>Grade % Length                    | Level     |                                |  |  |
| Driver type adjustment                    | 1.00                       | VC11/11      | Grade % Length<br>Up/Down %                           | mi        |                                |  |  |
| Calculate Flow Adjustr                    | nents                      |              | Op/Down 76  |           |                                |  |  |
| f <sub>p</sub>                            | 1.00                       |              | E <sub>R</sub>  | 1.2       |                                |  |  |
| E <sub>T</sub>                            | 1.5                        |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$          | 0.990     |                                |  |  |
| Speed Inputs                              |                            |              | Calc Speed Adj and FF                                 |           |                                |  |  |
| ane Width                                 | 12.0                       | ft           |   |           |                                |  |  |
| Rt-Shoulder Lat. Clearance                | 6.0                        | ft           | f <sub>LW</sub>                                       |           | mi/h                           |  |  |
| Interchange Density                       | 0.50                       | I/mi         | f <sub>LC</sub>                                       |           | mi/h                           |  |  |
| Number of Lanes, N                        | 4                          |              | $f_{ID}$  |           | mi/h                           |  |  |
| FFS (measured)                            | 56.0                       | mi/h         | f <sub>N</sub>  |           | mi/ħ                           |  |  |
| Base free-flow Speed, BFFS                |                            | mi/h         | FFS   | 56.0      | mi/h                           |  |  |
| LOS and Performance                       | Measures                   |              | Design (N)  |           |                                |  |  |
| Operational (LOS)                         |                            |              | Design (N)  |           |                                |  |  |
| Operational (LOS)                         |                            |              | Design LOS  |           |                                |  |  |
| $V_p = (V \text{ or DDHV}) / (PHF x N x)$ | († <sub>HV</sub> X<br>1791 | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF \times N \times N)$ | fv        |                                |  |  |
| (p)                                       | ,,,,,                      | ролин        |   | 'HV X     | pc/h                           |  |  |
| 5   | 56.0                       | mi/h         | f <sub>p</sub> )                                      |           | -                              |  |  |
| ) = v <sub>p</sub> / S                    | 32.0                       | pc/mi/ln     | S   |           | mi/h                           |  |  |
| .os                                       | D                          | •            | $D = v_p / S$   |           | pc/mi/ln                       |  |  |
| None and                                  |                            |              | Required Number of Lanes, N                           |           |                                |  |  |
| Glossary                                  |                            | *****        | Factor Location                                       |           |                                |  |  |
| V - Number of lanes                       | S - Speed                  |              | E <sub>R</sub> - Exhibits23-8, 23-10                  |           | f Evhihit 00 4                 |  |  |
| / - Hourly volume                         | D - Density                |              | **  | 4         | f <sub>LW</sub> - Exhibit 23-4 |  |  |
| p - Flow rate                             | FFS - Free-flow            | speed        | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1           | I         | f <sub>LC</sub> - Exhibit 23-5 |  |  |
| OS - Level of service                     | BFFS - Base fre            | e-flow speed | f <sub>p</sub> - Page 23-12                           |           | f <sub>N</sub> - Exhibit 23-6  |  |  |
| DDHV - Directional design hou             |                            | •            | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-2           | 2. 23-3   | f <sub>ID</sub> - Exhibit 23-7 |  |  |

# 

| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S. D             |
| Planning (N)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>n</sub> ) | FFS, LOS, N              | v <sub>o</sub> . S, D |

|   | гюж кае фели               | ii)<br>      |  |           |                                |
|---|----------------------------|--------------|--|-----------|--------------------------------|
| General Information                         |                            |              | Site Information                             |           |                                |
| Analyst                                     | SEB                        |              | Highway/Direction of Travel                  | Southbo   | ound I-87                      |
| Agency or Company                           | CHA                        |              | From/To                                      | Exit 6 to | Exit 5                         |
| Date Performed                              | 6/22/2011                  |              | Jurisdiction                                 | NYSDO     | T                              |
| Analysis Time Period                        | PM                         |              | Analysis Year                                | 2016 No   | o-Build                        |
| Project Description Exit 4                  |                            |              |  |           |                                |
| Oper.(LOS)                                  | )                          |              | Des.(N)                                      | □ Pla     | anning Data                    |
| Flow Inputs                                 |                            |              |  |           |                                |
| Volume, V                                   | 3450                       | veh/h        | Peak-Hour Factor, PHF                        | 0.92      |                                |
| AADT  |                            | veh/day      | %Trucks and Buses, $P_T$                     | 2         |                                |
| Peak-Hr Prop. of AADT, K                    |                            |              | %RVs, P <sub>R</sub>                         | 0         |                                |
| Peak-Hr Direction Prop, D                   |                            |              | General Terrain:                             | Level     |                                |
| DDHV = AADT x K x D  Driver type adjustment | 1.00                       | veh/h        | Grade % Length                               | mi        |                                |
| Calculate Flow Adjusti                      |                            |              | Up/Down %                                    |           |                                |
|   | 1.00                       |              | Г  | 4.5       |                                |
| f <sub>p</sub>                              |                            |              | E <sub>R</sub>                               | 1.2       |                                |
| E <sub>T</sub>                              | 1.5                        |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990     |                                |
| Speed Inputs                                |                            |              | Calc Speed Adj and FF                        | S         |                                |
| ane Width                                   | 12.0                       | ft           | $f_LW$                                       |           | mi/h                           |
| Rt-Shoulder Lat. Clearance                  | 6.0                        | ft           |  |           |                                |
| nterchange Density                          | 0.50                       | l/mi         | f <sub>LC</sub>                              |           | mi/h                           |
| Number of Lanes, N                          | 4                          |              | f <sub>ID</sub>                              |           | mi/h                           |
| FFS (measured)                              | 56.0                       | mi/h         | f <sub>N</sub>                               |           | mi/h                           |
| Base free-flow Speed, BFFS                  |                            | mi/h         | FFS  | 56.0      | mi/h                           |
| OS and Performance                          |                            |              | Design (N)                                   |           |                                |
|   |                            |              | Design (N)                                   |           |                                |
| Operational (LOS)                           |                            |              | Design LOS                                   |           |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$     | x f <sub>HV</sub> x<br>947 | no/h/ln      |  | , f       |                                |
| <sub>p</sub> )                              | 341                        | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF \times N)$ | CIHV X    | pc/h                           |
|   | 56.0                       | mi/h         | f <sub>p</sub> )                             |           | •                              |
| $v_p / S$                                   | 16.9                       | pc/mi/ln     | S  |           | mi/h                           |
| .OS   | В                          | b ~          | $D = v_p / S$                                |           | pc/mi/ln                       |
| -   |                            |              | Required Number of Lanes, N                  | I         |                                |
| Glossary                                    |                            |              | Factor Location                              |           |                                |
| I - Number of lanes                         | S - Speed                  |              | F - F-1-11-11-00 0 00 10                     |           |                                |
| / - Hourly volume                           | D - Density                |              | E <sub>R</sub> - Exhibits23-8, 23-10         |           | f <sub>LW</sub> - Exhibit 23-4 |
| , - Flow rate                               | FFS - Free-flow            | v speed      | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-1  | 11        | f <sub>LC</sub> - Exhibit 23-5 |
| OS - Level of service                       | BFFS - Base fr             |              | f <sub>p</sub> - Page 23-12                  |           | f <sub>N</sub> - Exhibit 23-6  |
|   |                            | co now speed | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | 2, 23-3   | f <sub>ID</sub> - Exhibit 23-7 |
| DDHV - Directional design ho                | ur volume                  | ·            | <u> </u>                                     |           | 1 and                          |

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|  | RAI                  | MPS AND            | RAMP JUNG         | <u> </u>   | ORKSHE  | <u>:EI</u>       |                     |                                      |                                      |  |  |
|--|----------------------|--------------------|-------------------|--|---|------------------|---------------------|--------------------------------------|--------------------------------------|--|--|
| General Info   | rmation              |                    |                   | Site Infor   | mation  |                  |                     |                                      |                                      |  |  |
| Analyst SEB Agency or Company CHA Date Performed 9/08/2011 Analysis Time Period PM |                      |                    |                   | Freeway/Dir of Travel Northbound I-87 Junction Exit 2W On-Ramp Jurisdiction NYSDOT Analysis Year 2016 No-Build |   |                  |                     |                                      |                                      |  |  |
| Project Description  | Exit 4               |                    |                   |  |   |                  |                     |                                      |                                      |  |  |
| Inputs   |                      | <del></del>        |                   |  |   |                  |                     |                                      |                                      |  |  |
| Upstream Adj Ram   |                      | Terrain: Level     |                   |  |   |                  |                     |                                      | Downstre<br>Ramp                     | am Adj                                       |  |
| Yes TO   |                      |                    |                   |  |   |                  |                     |                                      | ☐ Yes                                | □ On   |  |
| □ No □ O   |                      |                    |                   |  |   |                  |                     |                                      | M No                                 | □ Off  |  |
| $L_{up}$ = 1100 ft $S_{FF}$ = 56.0 mph $V_u$ = 900 veh/h Sketch (show lanes, $L_y$ |                      |                    |                   | show lanes I   | S <sub>FR</sub> = 4   | 0.0 mph          |                     |                                      | L <sub>down</sub> = V <sub>D</sub> = | ft<br>veh/h                                  |  |
| Conversion   |                      | l<br>der Rase (    |                   | snow lanes, L <sub>A</sub> ,   | D' R' V f'  |                  |                     |                                      |                                      |  |  |
|  |                      |                    |                   | 0/.  | 0/ D  | ١,               |                     |                                      | L. V/DUI                             |  |  |
| (pc/h)   | (Veh/hr)             | PHF                | Terrain           | %Truck   | %Rv   | f <sub>H</sub>   | V                   | f <sub>p</sub>                       | V = V/PHF                            | x f <sub>HV</sub> x f <sub>p</sub>           |  |
| Freeway  | 4400                 | 0.86               | Level             | 2  | 0   | 0.99             | 0                   | 1.00                                 | í                                    | 5167   |  |
| Ramp   | 730                  | 0.92               | Level             | 2  | 0   | 0.99             | 0                   | 1.00                                 |                                      | 801  |  |
| UpStream   | 900                  | 0.92               | Level             | 2  | 0   | 0.99             | 0                   | 1.00                                 |                                      | 988  |  |
| DownStream   | <u> </u>             | Marga Araga        |                   |  |   |                  |                     | Niverse Areas                        |                                      |  |  |
| Estimation of  |                      | Merge Areas        |                   |  | Diverge Areas   |                  |                     |                                      |                                      |  |  |
| Estimation o   |                      |                    |                   |  | Estimation of v <sub>12</sub>   |                  |                     |                                      |                                      |  |  |
|  | $V_{12} = V_F$       | (P <sub>FM</sub> ) |                   |  |   |                  | V <sub>12</sub> = ' | V <sub>R</sub> + (V <sub>F</sub> - V | ' <sub>R</sub> )P <sub>ED</sub>      |  |  |
| -EQ =  | 1344.35              | (Equation          | 25-2 or 25-3)     |  | L <sub>EQ</sub> = (Equation 25-8 or 25-9)   |                  |                     |                                      |                                      |  |  |
| P <sub>FM</sub> =  | 0.586                | using Equati       | on (Exhibit 25-5) |  | $P_{FD}$ = using Equation (Exhibit 25-12)   |                  |                     |                                      |                                      |  |  |
| / <sub>12</sub> =  | 3027                 | oc/h               |                   |  | V <sub>12</sub> =   |                  |                     | oc/h                                 | = :                                  |  |  |
| / <sub>3</sub> or V <sub>av34</sub>  | 2140                 | oc/h (Equatio      | n 25-4 or 25-     |  | V <sub>12</sub> - V <sub>3</sub> or V <sub>av34</sub>   |                  | -                   |                                      | 25 15 or 25                          | 14)  |  |
|  | 5)                   |                    |                   |  | $V_3$ or $V_{av34}$ pc/h (Equation 25-15 or 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No |                  |                     |                                      |                                      |  |  |
| Is $V_3$ or $V_{av34} > 2.7$   |                      |                    |                   |  | Is $V_3$ or $V_{av34} > 2.700$ pcm: Yes No  |                  |                     |                                      |                                      |  |  |
| Is $V_3$ or $V_{av34} > 1.5$   | * V <sub>12</sub> /2 | s 🗹 No             |                   |  |   |                  |                     |                                      |                                      |  |  |
| f Yes,V <sub>12a</sub> =   | pc/h                 | (Equation 25       | -8)               |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)   |                  |                     |                                      |                                      |  |  |
| Capacity Ch  | ecks                 |                    |                   |  | Capacity  | / Ched           | cks                 |                                      |                                      |  |  |
|  | Actual               | Ca                 | pacity            | LOS F?   |   |                  | Actual              | С                                    | apacity                              | LOS F  |  |
|  |                      |                    |                   |  | V <sub>F</sub>  |                  |                     | Exhibit 25                           | -14                                  |  |  |
| $V_{FO}$   | 5968                 | Exhibit 25-7       |                   | No   | V <sub>FO</sub> = V <sub>F</sub>  | - V <sub>D</sub> |                     | Exhibit 25                           | -14                                  |  |  |
| FU   |                      |                    |                   |  | V <sub>R</sub>  | N.               |                     | Exhibit 25                           | _                                    |  |  |
| Tlavy Entarin  | Maraa la             | fluores A          |                   |  |   | 40 11 10 0       | Divo                |                                      |                                      |  |  |
| Flow Enterin   |                      |                    | Desirable         | Violation?   | FIOW EII  |                  |                     | rge Influe<br>Max Des                |                                      | Violation?                                   |  |
| V  | Actual<br>3828       | Exhibit 25-7       | 4600:All          | Violation?<br>No   | \/  | Act              | _                   | Exhibit 25-14                        | ii anie                              | violation?                                   |  |
| V <sub>R12</sub>   |                      |                    |                   | INU  | V <sub>12</sub>   | Come             |                     |                                      | on /:f := =                          | <u>                                     </u> |  |
| Level of Ser   |                      |                    |                   |  | Level of Service Determination (if not F)   |                  |                     |                                      |                                      | n <b>r</b> )                                 |  |
| $D_R = 5.475 + 0.00734 \text{ v}_R + 0.0078 \text{ V}_{12} - 0.00627 \text{ L}_A$  |                      |                    |                   | $D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$  |   |                  |                     |                                      |                                      |  |  |
| D <sub>R</sub> = 29.6 (pc/mi/ln)   |                      |                    |                   | $D_R = (pc/mi/ln)$   |   |                  |                     |                                      |                                      |  |  |
| <u> </u>   | ibit 25-4)           |                    |                   |  |   | xhibit 2         |                     |                                      |                                      |  |  |
| Speed Deter  | mination             |                    |                   |  | Speed D   |                  |                     | on                                   |                                      |  |  |
| M <sub>S</sub> = 0.432 (E)   | (ibit 25-19)         |                    |                   |  | $D_s = (E_s)$   | xhibit 25-       | 19)                 |                                      |                                      |  |  |
| -  | (Exhibit 25-19)      |                    |                   |  | S <sub>R</sub> = mr   | oh (Exhib        | it 25-19)           |                                      |                                      |  |  |
|  | (Exhibit 25-19)      |                    |                   |  |   | oh (Exhib        | it 25-19)           |                                      |                                      |  |  |
|  | (Exhibit 25-14)      |                    |                   |  |   | `<br>oh (Exhib   |                     |                                      |                                      |  |  |
|  |                      |                    |                   |  |   |                  |                     |                                      |                                      |  |  |

|   |                             |  | RAMP                | S AND RAM   | IP JUNCTI                    | ONS WO   | RKS                           | HEET                               |   |                     |              |
|---|-----------------------------|--|---------------------|---|------------------------------|--|-------------------------------|------------------------------------|---|---------------------|--------------|
| Genera  | l Inforr                    | nation   |                     | <u> </u>  | Site Infor                   |  |                               |                                    |   |                     |              |
| Analyst<br>Agency or (<br>Date Perfor<br>Analysis Tir | Company<br>med<br>me Period | SEB<br>CHA<br>9/08/<br>PM  | 2011                | Freeway/Dir of Travel Northbound I-87  Junction Exit 4 NB Off  Jurisdiction NYSDOT  Analysis Year 2016 No-Build |                              |  |                               |                                    |   |                     |              |
| Project Des<br><b>Inputs</b>                          | scription                   | EXIT 4   |                     |   |                              |  |                               |                                    |   |                     |              |
| Upstream A  | ldi Dama                    |  | Terrain: Leve       | <u> </u>  |                              |  |                               |                                    |   | Downstrea           | ım Adi       |
| Yes   |                             |  |                     |   |                              |  |                               |                                    |   | Ramp                | •            |
| ✓ No  | □ Off                       |  |                     |   |                              |  |                               |                                    |   | ✓ Yes               | ✓ On         |
| IM INO  | i Oii                       |  |                     |   |                              |  |                               |                                    |   | □ No                | ☐ Off        |
| L <sub>up</sub> =                                     | ft                          |  |                     | E4.0 mnh  |                              | <u> </u>   | 0.0                           | - h                                |   | L <sub>down</sub> = | 2660 ft      |
| V <sub>u</sub> =                                      | veh/h                       |  | 3                   | $S_{FF} = 56.0 \text{ mph}$<br>Sketch (   | show lanes, L <sub>A</sub> , | $S_{FR} = 4$ $L_{D_t} V_{D_t} V_t$                                     | o.o m                         | JII                                |   | V <sub>D</sub> =    | 1430 veh/    |
| Conver  | sion to                     | pc/h Und   | der Base            | Conditions  | A                            | D. K. I.   |                               |                                    |   |                     |              |
| (pc/  | T                           | V (Veh/hr) PHF Terrain %Truck %Rv f <sub>HV</sub> f <sub>p</sub> |                     |   |                              | f <sub>p</sub>   | v = V/PHF                     | x f <sub>HV</sub> x f <sub>p</sub> |   |                     |              |
| Freeway   |                             | 5100   | 0.86                | Level   | 2                            | 0  | 0                             | .990                               | 1.00  | 59                  | 90           |
| Ramp  |                             | 620  | 0.86                | Level   | 2                            | 0  | 0                             | .990                               | 1.00  | 728                 |              |
| UpStream<br>DownStrea                                 | ım.                         | 1420   | 0.88                | Lovel   | 1                            | 0  | 0.995 1.00                    |                                    |   | 1633                |              |
| Downstiea   | 1111                        | 1430   | U.88<br>Merge Areas | Level   | 1                            | 0  | 0 0.995 1.00<br>Diverge Areas |                                    |   |                     | 33           |
| Estima  | tion of                     |  | g                   |   |                              | Estimation of v <sub>12</sub>  |                               |                                    |   |                     |              |
|   |                             | V <sub>12</sub> = V <sub>F</sub>                                 | ( P <sub>EM</sub> ) |   |                              |  |                               |                                    | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | )P <sub>ED</sub>    |              |
| L <sub>EQ</sub> =                                     |                             | 12 1   | ation 25-2 o        | r 25-3)   |                              | L <sub>FO</sub> = (Equation 25-8 or 25-9)                              |                               |                                    |   |                     |              |
| P <sub>FM</sub> =                                     |                             |  | Equation (I         |   |                              | $P_{FD}$ = 0.577 using Equation (Exhibit 25-12)                        |                               |                                    |   |                     |              |
| V <sub>12</sub> =                                     |                             | pc/h   |                     |   |                              | V <sub>12</sub> = 3763 pc/h  |                               |                                    |   |                     |              |
| V <sub>3</sub> or V <sub>av34</sub>                   |                             | pc/h   | (Equation 2         | 5-4 or 25-5)  |                              | V <sub>3</sub> or V <sub>av34</sub> 2227 pc/h (Equation 25-15 or 25-16 |                               |                                    |   |                     |              |
| Is V <sub>3</sub> or V <sub>av</sub>                  | <sub>v34</sub> > 2,700      | pc/h? TYe:   | s 🗆 No              |   |                              | Is V <sub>3</sub> or V <sub>av3</sub>                                  | 34 > 2,                       | 700 pc/h?                          | TYes   ✓ No   |                     |              |
|   |                             | V <sub>12</sub> /2   |                     |   |                              |  |                               |                                    | TYes ✓ No   |                     |              |
| If Yes,V <sub>12a</sub>                               |                             |  | (Equation 2         | 5-8)  |                              | If Yes,V <sub>12a</sub> =  |                               |                                    | oc/h (Equation                                      | 25-18)              |              |
| Capacit   | ty Chec                     |  | ,                   |   | 1                            | Capacity   | y Ch                          | 1                                  |   |                     | •            |
|   |                             | Actual   | C                   | Capacity  | LOS F?                       | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \                                  |                               | Actual                             | <del>- 1</del>                                      | pacity              | LOS F?       |
| .,  |                             |  | E 1 11 11 0 E 7     |   |                              | V <sub>F</sub>   |                               |                                    | Exhibit 25-1  | _                   | No           |
| V <sub>F</sub>  | · O                         |  | Exhibit 25-7        |   |                              | $V_{FO} = V_{F}$   | - v <sub>R</sub>              | 5262                               | Exhibit 25-1  |                     | No           |
| <u> </u>  |                             |  | <u></u>             |   | ļ                            | V <sub>R</sub>   |                               | 728                                | Exhibit 25-3  |                     | No           |
| Flow EI   | ntering<br>I                | Merge In   | Y                   | A <b>rea</b><br>Desirable   | Violation?                   | Flow En  | 1                             | <b>ng Dive</b><br>Actual           | rge Influen<br>Max Desirat                          |                     | Violation?   |
| V <sub>R1</sub>                                       | 10                          | Actual   | Exhibit 25-7        | Desirable   | violation:                   | V <sub>12</sub>  | _                             | 3763                               | Exhibit 25-14                                       | 4400:All            | No           |
| Level o   | f Servi                     | ce Detern  |                     | if not F)   | <u> </u>                     |  |                               |                                    | eterminatio   |                     |              |
|   |                             |  | •                   | · 0.00627 L <sub>A</sub>  |                              |  |                               |                                    | .0086 V <sub>12</sub> - 0.                          | •                   | - /          |
| D <sub>R</sub> =                                      | (pc/mi/lı                   | •                          | 12                  | A   |                              | L  |                               | :/mi/ln)                           | 12  | D                   |              |
| LOS = (Exhibit 25-4)                                  |                             |  |                     | LOS = D (Exhibit 25-4)  |                              |  |                               |                                    |   |                     |              |
| Speed   | ,                           |  |                     |   |                              | Speed D  | •                             |                                    | on  |                     |              |
| _   | Exibit 25                   |  |                     |   |                              | _  |                               | xhibit 25                          |   |                     |              |
| _   |                             | bit 25-19)   |                     |   |                              | S <sub>R</sub> = 50  | .0 mpl                        | n (Exhibit                         | 25-19)  |                     |              |
|   |                             | bit 25-19)   |                     |   |                              | $S_0 = 56$   | .6 mpl                        | n (Exhibit                         | 25-19)  |                     |              |
| -   | nph (Exhi                   | bit 25-14)   |                     |   |                              | S = 52   | .3 mpl                        | n (Exhibit                         | 25-15)  |                     |              |
| Copyright © 2   | 2007 Univer                 | sity of Florida, A   | All Rights Reser    | ved   |                              | HCS+TM \   | Version                       | 5.3                                | Gen   | erated: 12/16       | /2011 8:41 A |

|   |                                    | VIF 3 AND                               | RAMP JUNG                             |  |                                       | <u> </u>  |                      |                                      |                                 |                                      |
|---|------------------------------------|---|---------------------------------------|--|---------------------------------------|---|----------------------|--------------------------------------|---------------------------------|--------------------------------------|
| General Info  | rmation                            |   |                                       | Site Infor   | mation                                |   |                      |                                      |                                 |                                      |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 9/08/                              |   | Jui<br>Jui                            | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year |                                       | Northboun<br>Exit 4 NB (<br>NYSDOT<br>2016 No-E | On-Ran               | np                                   |                                 |                                      |
| Project Description   |                                    |   | 7.1.                                  | arysis rour  | •                                     | 2010110 2                                       | Juliu                |                                      |                                 |                                      |
| nputs   |                                    |   |                                       |  |                                       |   |                      |                                      |                                 |                                      |
| Jpstream Adj Ramp   | )                                  | Terrain: Level                          |                                       |  |                                       |   |                      |                                      | Downstre<br>Ramp                | am Adj                               |
| Yes O   | n                                  |   |                                       |  |                                       |   |                      |                                      | ✓ Yes                           | □ On                                 |
| ™ No □ O  | ff                                 |   |                                       |  |                                       |   |                      |                                      | □ No                            | ✓ Off                                |
| - <sub>up</sub> = ft  |                                    |   | =                                     |  |                                       |   |                      |                                      | L <sub>down</sub> =             | 3500 ft                              |
| $l_{\rm u} = {\rm veh/l}$   | า                                  | S                                       | $_{FF} = 56.0 \text{ mph}$ Sketch ( s | show lanes, L <sub>A</sub> ,                           | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$      | 0.0 mph   |                      |                                      | V <sub>D</sub> =                | 440 veh/h                            |
| Conversion t  | to pc/h Und                        | der Base C                              | Conditions                            |  |                                       |   |                      |                                      | •                               |                                      |
| (pc/h)  | V<br>(Veh/hr)                      | PHF                                     | Terrain                               | %Truck   | %Rv                                   | f <sub>HV</sub>                                 | ,                    | $f_p$                                | v = V/PHI                       | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 4500                               | 0.86                                    | Level                                 | 2  | 0                                     | 0.990   |                      | 1.00                                 |                                 | 5285                                 |
| Ramp  | 1430                               | 0.88                                    | Level                                 | 1  | 0                                     | 0.995   |                      | 1.00                                 |                                 | 1633                                 |
| UpStream  |                                    |   |                                       | _  | <u> </u>                              |   |                      |                                      |                                 |                                      |
| DownStream  | 440                                | 0.92                                    | Level                                 | 3  | 0                                     | 0.985   |                      | 1.00                                 |                                 | 485                                  |
| Estimation o  |                                    | Merge Areas                             |                                       |  | Estimati                              | ion of v  |                      | Diverge Areas                        |                                 |                                      |
|   |                                    | (D )                                    |                                       |  |                                       |   | 12                   |                                      |                                 |                                      |
|   | $V_{12} = V_{F}$                   | • |                                       |  |                                       |   | V <sub>12</sub> =    | V <sub>R</sub> + (V <sub>F</sub> - V | ′ <sub>R</sub> )P <sub>FD</sub> |                                      |
| ·EQ =   |                                    | (Equation :                             |                                       |  | L <sub>EQ</sub> =                     |   |                      | (Equation 25                         | 5-8 or 25-9                     | 9)                                   |
| P <sub>FM</sub> =   |                                    |   | on (Exhibit 25-5)                     |  | P <sub>FD</sub> =                     |   |                      | using Equat                          | ion (Exhibit                    | 25-12)                               |
| / <sub>12</sub> =   | 3185                               |   |                                       |  | V <sub>12</sub> =                     |   |                      | pc/h                                 |                                 |                                      |
| <sub>3</sub> or V <sub>av34</sub>                                     | 2100 <sub> </sub><br>5)            | pc/h (Equatio                           | n 25-4 or 25-                         |  | $V_3$ or $V_{av34}$                   |   |                      | pc/h (Equation                       | 25-15 or 25                     | 5-16)                                |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                          | ,                                  | s 🔽 No                                  |                                       |  | Is V <sub>3</sub> or V <sub>av3</sub> | 34 > 2,700                                      | pc/h? [              | TYes □ No                            | 0                               |                                      |
| Is $V_3$ or $V_{av34} > 1.5$  |                                    |   |                                       |  | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>34</sub> > 1.5 * \                         | / <sub>12</sub> /2 [ | TYes □ No                            | 0                               |                                      |
| Yes,V <sub>12a</sub> =  |                                    | (Equation 25                            | -8)                                   |  | If Yes, V <sub>12a</sub> =            |   |                      | pc/h (Equati                         | on 25-18)                       |                                      |
| Capacity Che  |                                    | (Equation 20                            |                                       |  | Capacit                               |   | ks                   |                                      |                                 |                                      |
| supuonty on   | Actual                             | Ca                                      | npacity                               | LOS F?   | Joapaon                               | 1   | Actual               | C                                    | apacity                         | LOS F                                |
|   |                                    | Ì                                       |                                       |  | V <sub>F</sub>                        |   |                      | Exhibit 25                           |                                 |                                      |
| $V_{FO}$  | 6918                               | Exhibit 25-7                            |                                       | Yes  | $V_{FO} = V_{F}$                      | - V-  |                      | Exhibit 25                           |                                 | _                                    |
| *FO   | 0710                               | EXHIBIT 25-7                            |                                       | 103  |                                       | *R  |                      | Exhibit 25                           | _                               | -                                    |
| Tlave Fratarin  | . Mayara In                        | fluores A                               |                                       | <u> </u>   | V <sub>R</sub>                        | 40 11 10 01                                     | Dive                 |                                      |                                 |                                      |
| Flow Enterin  | <b>g Merge In</b><br>Actual        |   | <b>rea</b><br>Desirable               | Violation?   | riow En                               | tering<br>Actu                                  |                      | rge Influe<br>Max Des                |                                 | Violation                            |
| V <sub>R12</sub>  | 4818                               | Exhibit 25-7                            | 4600:All                              | Yes  | V <sub>12</sub>                       | Actu  |                      | Exhibit 25-14                        | ii abic                         | violations                           |
| Level of Serv   |                                    |   |                                       | 163  |                                       | Sarvic  |                      | terminati                            | on (if no                       | )                                    |
|   | - 0.00734 v <sub>R</sub> + (       |   |                                       |  | 1                                     |   |                      | .0086 V <sub>12</sub> -              |                                 | <i>,</i> , ,                         |
| $D_{R} = 3.475$   | 11                                 | 12 0.0                                  | A                                     |  |                                       | c/mi/ln)  | J_ F U               | .3000 12                             | 0.000 LD                        |                                      |
| Κ   | bit 25-4)                          |   |                                       |  | 1 "                                   | c/mi/in)<br>Exhibit 25                          | 5_4)                 |                                      |                                 |                                      |
| Speed Deteri  |                                    |   |                                       |  | <u> </u>                              |   |                      | 20                                   |                                 |                                      |
|   |                                    |   |                                       |  | Speed D                               | xhibit 25-1                                     |                      | <i>)</i>                             |                                 |                                      |
| $M_{\rm S} = 0.731  ({\rm Ex}$  |                                    |   |                                       |  | 3                                     |   | -                    |                                      |                                 |                                      |
|   | (Exhibit 25-19)                    |   |                                       |  | S <sub>R</sub> = m <sub>l</sub>       | oh (Exhibit                                     | 25-19)               |                                      |                                 |                                      |
|   |                                    |   |                                       |  | C                                     | 1. /  | OF 40'               |                                      |                                 |                                      |
| $S_0 = 50.2 \text{ mph}$  | (Exhibit 25-19)<br>(Exhibit 25-14) |   |                                       |  | I * .                                 | oh (Exhibit<br>oh (Exhibit                      |                      |                                      |                                 |                                      |

| 0  |                                  | TO TOTAL                            | S AND RAN                |  |  |                   |                 |   |                     |                                    |
|--|----------------------------------|-------------------------------------|--------------------------|--|--|-------------------|-----------------|---|---------------------|------------------------------------|
| General Infor  |                                  |                                     |                          | Site Infor   |  |                   |                 |   |                     |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioo | 9/08/                            |                                     | J                        | reeway/Dir of Tra<br>unction<br>urisdiction<br>unalysis Year |  | Exit 5 N<br>NYSD( |                 |   |                     |                                    |
| Project Description  |                                  |                                     |                          |  |  |                   |                 |   |                     |                                    |
| Inputs   |                                  |                                     |                          |  |  |                   |                 |   |                     |                                    |
| Upstream Adj Ramp  |                                  | Terrain: Level                      |                          |  |  |                   |                 |   | Downstrea<br>Ramp   | m Adj                              |
| Yes Or   |                                  |                                     |                          |  |  |                   |                 |   | ☐ Yes               | □ On                               |
| □ No □ Of  | f                                |                                     |                          |  |  |                   |                 |   | ✓ No                | ☐ Off                              |
| L <sub>up</sub> = 3500   | ft                               | 9                                   | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 3                                      | 25 0 mr           | h.              |   | L <sub>down</sub> = | ft                                 |
| V <sub>u</sub> = 1430 v  |                                  |                                     | Sketch (                 | show lanes, L <sub>A</sub> ,                                 |  | 10.0 mp           | )II             |   | V <sub>D</sub> =    | veh/h                              |
| Conversion t   | o pc/h Und                       | der Base (                          | Conditions               |  |  |                   |                 |   |                     |                                    |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                                 | Terrain                  | %Truck   | %Rv  | $\perp$           | f <sub>HV</sub> | f <sub>p</sub>  | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 5900                             | 0.86                                | Level                    | 2  | 0  | _                 | .990            | 1.00  | 692                 |                                    |
| Ramp   | 440                              | 0.92                                | Level                    | 3  | 0  | _                 | .985            | 1.00  | 48                  |                                    |
| UpStream<br>DownStream   | 1430                             | 0.88                                | Level                    | 1  | 0  | 0.                | .995            | 1.00  | 163                 | 33                                 |
| Downstream   |                                  | Merge Areas                         |                          |  |  |                   |                 | L<br>Diverge Areas  |                     |                                    |
| Estimation of v <sub>12</sub>  |                                  |                                     |                          |  | Estimati   | ion c             |                 | 51101.go 711.ouc  |                     |                                    |
|  | V <sub>12</sub> = V <sub>F</sub> | (D )                                |                          |  |  |                   |                 | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub>                   | \D                  |                                    |
| l –  |                                  | (F <sub>FM</sub> )<br>ation 25-2 or | 25 2)                    |  | _  |                   |                 | - v <sub>R</sub> + (v <sub>F</sub> - v <sub>I</sub><br>438.97 (Equati |                     | 3F 0\                              |
| L <sub>EQ</sub> =<br>P =   |                                  | Equation (E                         |                          |  | L <sub>EQ</sub> =  |                   |                 | .729 using Ec   |                     |                                    |
| P <sub>FM</sub> =<br>V <sub>12</sub> =                                 | pc/h                             | Lquation (L                         | ATIIDIL 23-3)            |  | P <sub>FD</sub> =<br>V <sub>12</sub> =                   |                   |                 | .729 using Ec<br>180 pc/h   | quation (Exili      | DIL 23-12)                         |
| V <sub>12</sub> =<br>V <sub>3</sub> or V <sub>av34</sub>               | •                                | (Equation 25                        | -1 or 25-5)              |  | V <sub>12</sub> –<br>V <sub>3</sub> or V <sub>av34</sub> |                   |                 | 749 pc/h (Equ   | ation OF 15         | or 25 16                           |
| Is $V_3$ or $V_{av34} > 2,70$  |                                  |                                     | - <del>4</del> 01 23-3)  |  |  | > 2.7             |                 | 749 pc/ii (Equ<br>☐ Yes ☑ No  | iali011 25-15       | 01 25-10                           |
| Is $V_3$ or $V_{av34} > 2,76$  |                                  |                                     |                          |  |  |                   |                 | Yes V No  |                     |                                    |
| If Yes,V <sub>12a</sub> =  | · <del>-</del>                   | S I NO<br>(Equation 25              | -8)                      |  | If Yes, $V_{12a} =$                                      |                   |                 | oc/h (Equation  | 25-18)              |                                    |
| Capacity Che   |                                  | (Equation 23                        | -0)                      |  | Capacit  |                   |                 | oon (Equation   | 125-10)             |                                    |
| Capacity Cite  | Actual                           | T C:                                | apacity                  | LOS F?   | Capacit  | y Cii             | Actual          | l Ca  | pacity              | LOS F                              |
|  | Actual                           |                                     | трасну                   | L031:  | V <sub>F</sub>   |                   | 6929            | Exhibit 25-1  | <u> </u>            | Yes                                |
| V <sub>FO</sub>  |                                  | Exhibit 25-7                        |                          |  | $V_{FO} = V_F$   | - V               | 6444            | Exhibit 25-1  |                     | No                                 |
| *FO  |                                  | LAHIDIT 25-7                        |                          |  |  | <sup>v</sup> R    |                 |   |                     |                                    |
| <u></u>  | <u> </u>                         | <u></u>                             |                          |  | V <sub>R</sub>   |                   | 485             | Exhibit 25-3  |                     | No                                 |
| Flow Entering  |                                  | 1                                   |                          | \/iolation?  | riow En  | - 1               |                 | rge Influen   |                     | Violation                          |
| V <sub>R12</sub>   | Actual                           | Exhibit 25-7                        | Desirable                | Violation?   | V <sub>12</sub>  | _                 | Actual<br>5180  | Max Desirat<br>Exhibit 25-14  | 4400:All            | Yes                                |
| V <sub>R12</sub><br>Level of Serv                                      | ica Dotorr                       |                                     | f not El                 |  |  |                   |                 | eterminatio   |                     |                                    |
| $D_{R} = 5.475 + 0.$   |                                  |                                     |                          |  |  |                   |                 | 0.0086 V <sub>12</sub> - 0.   | -                   | )                                  |
|  | .,                               | 0.0070 V <sub>12</sub>              | 0.00021 LA               |  |  | •••               |                 | 12 - 0.   | _D                  |                                    |
|  |                                  |                                     |                          |  | l ''   |                   | /mi/ln)         |   |                     |                                    |
| `  |                                  |                                     |                          |  | Speed D  | •                 | oit 25-4)       | <u> </u>  |                     |                                    |
| Speed Deterr   |                                  |                                     |                          |  |  |                   |                 |   |                     |                                    |
| $M_S = (Exibit 2)$   |                                  |                                     |                          |  | . "  | •                 | xhibit 25       | *   |                     |                                    |
|  | ibit 25-19)                      |                                     |                          |  | ***  | -                 | (Exhibit        |   |                     |                                    |
|  | ibit 25-19)                      |                                     |                          |  | S <sub>0</sub> = 58.5 mph (Exhibit 25-19)                |                   |                 |   |                     |                                    |
| S = mph (Exhibit 25-14)  |                                  | S = 51                              | 1 1 222                  | ı (Exhibit   | OF 45\   |                   |                 |   |                     |                                    |

|  |                               | KAMP                  | S AND RAM                |   |                                       | KNO                                  | <u> </u>        |   |                     |                                    |
|--|-------------------------------|-----------------------|--------------------------|---|---------------------------------------|--------------------------------------|-----------------|---|---------------------|------------------------------------|
| General Infor  | mation                        |                       |                          | Site Infor  |                                       |                                      |                 |   |                     |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioc | SEB<br>CHA<br>9/08/<br>I PM   |                       | Ju<br>Ju                 | eeway/Dir of Tr<br>Inction<br>Irisdiction<br>nalysis Year |                                       | Southb<br>Exit 2W<br>NYSD(<br>2016 N | / Off           |   |                     |                                    |
| Project Description  | Exit 4                        |                       |                          |   |                                       |                                      |                 |   |                     |                                    |
| Inputs   |                               | 1                     |                          |   |                                       |                                      |                 |   |                     |                                    |
| Upstream Adj Ramp  |                               | Terrain: Level        |                          |   |                                       |                                      |                 |   | Downstrea<br>Ramp   | m Adj                              |
| Yes Or   |                               |                       |                          |   |                                       |                                      |                 |   | ✓ Yes               | ✓ On                               |
| ✓ No ☐ Of  | İ                             |                       |                          |   |                                       |                                      |                 |   | □ No                | ☐ Off                              |
| _ <sub>up</sub> = ft   |                               | <u> </u>              | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4                   | 10 0 mr                              | h               |   | L <sub>down</sub> = | 1300 ft                            |
| V <sub>u</sub> = veh/h   |                               |                       | Sketch (                 | show lanes, L <sub>A</sub> ,                              |                                       | ю.о пір                              |                 |   | V <sub>D</sub> =    | 800 veh/                           |
| Conversion to  |                               | der Base C            | Conditions               |   |                                       |                                      |                 |   |                     |                                    |
| (pc/h)   | V<br>(Veh/hr)                 | PHF                   | Terrain                  | %Truck  | %Rv                                   | $\perp$                              | f <sub>HV</sub> | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 3850                          | 0.92                  | Level                    | 2   | 0                                     | 0.                                   | 990             | 1.00  | 42:                 | 27                                 |
| Ramp   | 500                           | 0.92                  | Level                    | 2   | 0                                     | 0.                                   | 990             | 1.00  | 54                  | 9                                  |
| UpStream   |                               | 0.00                  |                          |   |                                       | +-                                   |                 | 1.00  |                     |                                    |
| DownStream   | 800                           | 0.92 Merge Areas      | Level                    | 2   | 0                                     | 0.                                   | 990             | 1.00<br>Diverge Areas                               | 87                  | 8                                  |
| Estimation of  | Estimation of v <sub>12</sub> |                       |                          |   | Estimati                              | ion c                                |                 | Diverge Areas                                       |                     |                                    |
| Ligariation of   |                               |                       |                          |   | LStillati                             | 1011                                 |                 |   |                     |                                    |
|  | $V_{12} = V_F$                |                       |                          |   |                                       |                                      |                 | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> |                     |                                    |
| L <sub>EQ</sub> =  |                               | ation 25-2 or         |                          |   | L <sub>EQ</sub> =                     |                                      |                 | Equation 25-8                                       |                     |                                    |
| P <sub>FM</sub> =  | using                         | Equation (E           | xhibit 25-5)             |   | P <sub>FD</sub> =                     |                                      |                 | .629 using Ed                                       | uation (Exh         | ibit 25-12)                        |
| V <sub>12</sub> =  | pc/h                          |                       |                          |   | V <sub>12</sub> =                     |                                      | 2               | 863 pc/h  |                     |                                    |
| V <sub>3</sub> or V <sub>av34</sub>                                    |                               | (Equation 25          | -4 or 25-5)              |   | $V_3$ or $V_{av34}$                   |                                      |                 | 364 pc/h (Equ                                       | ation 25-15         | or 25-16                           |
| Is $V_3$ or $V_{av34} > 2,70$  |                               |                       |                          |   |                                       |                                      |                 | ☐ Yes ☑ No  |                     |                                    |
| Is $V_3$ or $V_{av34} > 1.5$   | V <sub>12</sub> /2            | s 🗆 No                |                          |   | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>34</sub> > 1.5                  |                 | TYes  ✓ No  |                     |                                    |
| If Yes,V <sub>12a</sub> =  | pc/h                          | (Equation 25          | -8)                      |   | If Yes,V <sub>12a</sub> =             | :                                    | ŗ               | oc/h (Equation                                      | 25-18)              |                                    |
| Capacity Che   | cks                           |                       |                          |   | Capacit                               | y Ch                                 | ecks            |   |                     |                                    |
|  | Actual                        | Ca                    | pacity                   | LOS F?  |                                       |                                      | Actual          | Ca  | pacity              | LOS F                              |
|  |                               |                       |                          |   | V <sub>F</sub>                        |                                      | 4227            | Exhibit 25-1  | 4 6780              | No                                 |
| $V_{FO}$   |                               | Exhibit 25-7          |                          |   | $V_{FO} = V_{F}$                      | - V <sub>R</sub>                     | 3678            | Exhibit 25-1  | 4 6780              | No                                 |
|  |                               |                       |                          |   | V <sub>R</sub>                        |                                      | 549             | Exhibit 25-3  | 3 2100              | No                                 |
| Flow Entering  | n Merge In                    | fluence A             | rea                      |   | Flow Fn                               | terin                                | a Dive          | rge Influen   | ce Area             |                                    |
| TOW LINCOLNY   | Actual                        |                       | Desirable                | Violation?  | 1 1011 211                            | -                                    | Actual          | Max Desirat   |                     | Violation                          |
| V <sub>R12</sub>   |                               | Exhibit 25-7          |                          |   | V <sub>12</sub>                       |                                      | 2863            | Exhibit 25-14                                       | 4400:All            | No                                 |
| Level of Serv  | ice Detern                    |                       | f not F)                 |   |                                       | Ser                                  | vice De         | eterminatio   | n (if not l         | <del>-</del> )                     |
| $D_R = 5.475 + 0.$   |                               | •                     |                          |   |                                       |                                      |                 | 0.0086 V <sub>12</sub> - 0.                         | _                   | ,                                  |
| O <sub>R</sub> = (pc/mi/   | • • •                         | 12                    | А                        |   | L                                     | • • •                                | /mi/ln)         | 12  | D                   |                                    |
| _OS = (Exhibi  |                               |                       |                          |   |                                       |                                      | oit 25-4)       |   |                     |                                    |
| Speed Determination  |                               |                       |                          | Speed E   | •                                     |                                      | on              |   |                     |                                    |
| •  |                               |                       |                          |   |                                       |                                      | xhibit 25       |   |                     |                                    |
| M <sub>S</sub> = (Exibit 2   |                               |                       |                          |   | l "                                   | ,                                    |                 | •   |                     |                                    |
|  | ibit 25-19)                   |                       |                          |   | **                                    | -                                    | (Exhibit        |   |                     |                                    |
| <sub>0</sub> = mph (Exhibit 25-19)                                     |                               | $S_0 = 60$            | ט.u mph                  | (Exhibit  | ∠5-19)                                |                                      |                 |   |                     |                                    |
|  | 11105 44                      | = mph (Exhibit 25-14) |                          |   | S = 53                                |                                      | (Exhibit        | \   |                     |                                    |

|  |                         |                          |                          |   | ONS WO                                    |                   |                 |  |                     |   |
|--|-------------------------|--------------------------|--------------------------|---|---|-------------------|-----------------|--|---------------------|---|
| General Infor  | mation                  |                          |                          | Site Infor  | mation                                    |                   |                 |  |                     |   |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perion | 9/08/                   |                          | J                        | reeway/Dir of Tr<br>unction<br>urisdiction<br>analysis Year |   | Exit 4 S<br>NYSD( |                 |  |                     |   |
| Project Description  | Exit 4                  |                          |                          |   |   |                   |                 |  |                     |   |
| Inputs   |                         |                          |                          |   |   |                   |                 |  |                     |   |
| Upstream Adj Ramp  |                         | Terrain: Leve            |                          |   |   |                   |                 |  | Downstrea<br>Ramp   | m Adj   |
| ☐ Yes ☐ Or   |                         |                          |                          |   |   |                   |                 |  | ✓ Yes               | ✓ On  |
| ☑ No ☐ Of  | f                       |                          |                          |   |   |                   |                 |  | □ No                | ☐ Off   |
| L <sub>up</sub> = ft   |                         | 5                        | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4                       | 0 0 mr            | h               |  | L <sub>down</sub> = | 3100 ft                                       |
| V <sub>u</sub> = veh/h   |                         |                          | Sketch (                 | ( show lanes, L <sub>A</sub>                                |   | 0.0 mp            | '''             |  | V <sub>D</sub> =    | 440 veh/l                                     |
| Conversion t   | o pc/h Un               | der Base (               | Conditions               |   |   |                   |                 |  |                     |   |
| (pc/h)   | V<br>(Veh/hr)           | PHF                      | Terrain                  | %Truck  | %Rv                                       |                   | f <sub>HV</sub> | f <sub>p</sub>                         | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub>            |
| Freeway  | 2800                    | 0.92                     | Level                    | 2   | 0   | 0.                | 990             | 1.00                                   | 30                  | 74  |
| Ramp   | 640                     | 0.92                     | Level                    | 2   | 0   | 0.                | 990             | 1.00                                   | 70                  | 3   |
| UpStream<br>DownStream   | 440                     | 0.07                     | Lough                    | 1   |   | +                 | 005             | 1.00                                   | F0                  | 0   |
| Downstieam   | 440                     | 0.87<br>Merge Areas      | Level                    | 1   | 0   | 0.                | 995             | 1.00<br>Diverge Areas                  | 50                  | 8   |
| Estimation o   |                         | werge rireas             |                          |   | Estimati                                  | ion c             |                 | biverge / ireas                        |                     |   |
|  |                         | /D )                     |                          |   |   |                   |                 | = V <sub>R</sub> + (V <sub>F</sub> - V | \D                  |   |
| 1  | $V_{12} = V_F$          |                          | OF 0\                    |   |   |                   |                 |  |                     |   |
| L <sub>EQ</sub> =  |                         | ation 25-2 or            |                          |   | L <sub>EQ</sub> =                         |                   |                 | Equation 25-8                          |                     | :L::: OF 10\                                  |
| P <sub>FM</sub> =  | _                       | Equation (E              | XIIIDII 25-5)            |   | P <sub>FD</sub> =                         |                   |                 | .651 using Ed                          | luation (Exn        | IDIT 25-12)                                   |
| V <sub>12</sub> =  | pc/h                    | /Faustian OF             | 4 or 05 5)               |   | V <sub>12</sub> =                         |                   |                 | 246 pc/h                               | 05.45               | 05.40\  |
| V <sub>3</sub> or V <sub>av34</sub>                                    |                         | (Equation 25             | -4 Of 25-5)              |   | V <sub>3</sub> or V <sub>av34</sub>       | . 27              |                 | 28 pc/h (Equa                          | ition 25-15         | or 25-16)                                     |
| Is $V_3$ or $V_{av34} > 2,70$<br>Is $V_3$ or $V_{av34} > 1.5$          |                         |                          |                          |   |   |                   |                 | Yes ✓ No                               |                     |   |
|  | · <del>-</del>          |                          | 0/                       |   | 5 475                                     | , ,               | 12              |  | OF 10)              |   |
| If Yes,V <sub>12a</sub> =  |                         | (Equation 25             | -8)                      |   | If Yes,V <sub>12a</sub> =                 |                   |                 | oc/h (Equation                         | 125-18)             |   |
| Capacity Che   | 1                       | 1 0                      |                          | LOS F?  | Capacity                                  | y Cn              |                 |  | 11                  | LOS F   |
|  | Actual                  |                          | apacity                  | LUS F?  | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \     |                   | Actual          |  | pacity              |   |
| .,   |                         |                          |                          |   | V <sub>F</sub>                            |                   | 3074            | Exhibit 25-1                           |                     | No  |
| $V_{FO}$   |                         | Exhibit 25-7             |                          |   | $V_{FO} = V_{F}$                          | - v <sub>R</sub>  | 2371            | Exhibit 25-1                           | <del>-</del>        | No  |
|  |                         |                          |                          |   | V <sub>R</sub>                            |                   | 703             | Exhibit 25-3                           | 3 2100              | No  |
| Flow Entering  |                         | 1                        |                          |   | Flow En                                   | 1                 |                 | rge Influen                            |                     |   |
|  | Actual                  | <del> </del>             | Desirable                | Violation?  | <del>  ,.</del>                           | _                 | Actual          | Max Desiral                            |                     | Violation                                     |
| V <sub>R12</sub>   | <u> </u>                | Exhibit 25-7             | ·                        |   | V <sub>12</sub>                           |                   | 2246            | Exhibit 25-14                          | 4400:All            | No  |
| Level of Serv  |                         |                          |                          |   |   |                   |                 | terminatio                             |                     | <u>-)                                    </u> |
| $D_R = 5.475 + 0.0$  |                         | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |   |   |                   |                 | 0.0086 V <sub>12</sub> - 0.            | 009 L <sub>D</sub>  |   |
| D <sub>R</sub> = (pc/mi/   | ln)                     |                          |                          |   |   |                   | /mi/ln)         |  |                     |   |
| •  | it 25-4)                |                          |                          |   |   | •                 | oit 25-4)       |  |                     |   |
| Speed Deteri   | Speed Determination     |                          |                          |   | Speed D                                   | eter              | minati          | on                                     |                     |   |
| M <sub>S</sub> = (Exibit 2   | 5-19)                   |                          |                          |   | $D_s = 0.4$                               | 426 (E            | xhibit 25       | -19)                                   |                     |   |
| S <sub>R</sub> = mph (Exh  | nibit 25-19)            |                          |                          |   | $S_R = 50$                                | 0.0 mph           | (Exhibit        | 25-19)                                 |                     |   |
|  |                         |                          |                          |   | S <sub>0</sub> = 61.4 mph (Exhibit 25-19) |                   |                 |  |                     |   |
| $S_0 = mph (Exh$   | S = mph (Exhibit 25-14) |                          |                          | S = 52.7 mph (Exhibit 25-15)                                |   |                   |                 |  |                     |   |

|  | RAI                              | MPS AND F                     | <u>RAMP JU</u> N                    | <u>CTIONS</u> W                            | ORKSHE                              | ET   |                          |                     |                                      |
|--|----------------------------------|-------------------------------|-------------------------------------|--|-------------------------------------|--|--------------------------|---------------------|--------------------------------------|
| General Infor                                  | mation                           |                               |                                     | Site Infor                                 | mation                              |  |                          |                     |                                      |
| Analyst<br>Agency or Company<br>Date Performed | SEB<br>CHA<br>9/08/              |                               | Ju                                  | reeway/Dir of Tr<br>unction<br>urisdiction |                                     | Southbound I-F<br>Exit 4 SB On-F<br>NYSDOT |                          |                     |                                      |
| Analysis Time Perior<br>Project Description    | d PM                             | 2011                          |                                     | nalysis Year                               |                                     | 2016 No-Build                              |                          |                     |                                      |
| nputs  | LAIL 4                           |                               |                                     |  |                                     |  |                          |                     |                                      |
| Jpstream Adj Ramp                              |                                  | Terrain: Level                |                                     |  |                                     |  |                          | Downstr             | eam Adi                              |
| Yes Or   |                                  |                               |                                     |  |                                     |  |                          | Ramp  T Yes         |                                      |
| □ No □ Of                                      | f                                |                               |                                     |  |                                     |  |                          | ✓ No                | □ On<br>□ Off                        |
| - <sub>up</sub> = 2035                         | ft                               |                               |                                     |  |                                     |  |                          | L <sub>down</sub> = | ft                                   |
| $v_{u} = 440 \text{ V}$                        |                                  | S <sub>F</sub>                | <sub>F</sub> = 56.0 mph<br>Sketch ( | show lanes, L <sub>A</sub> ,               | $S_{FR} = 4$ $L_{D_f} V_{P_f} V_f)$ | 0.0 mph                                    |                          | V <sub>D</sub> =    | veh/h                                |
| Conversion t                                   | o pc/h Un                        | der Base C                    |                                     |  | D K I                               |  |                          |                     |                                      |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                           | Terrain                             | %Truck                                     | %Rv                                 | f <sub>HV</sub>                            | f <sub>p</sub>           | v = V/PH            | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 2800                             | 0.92                          | Level                               | 2  | 0                                   | 0.990                                      | 1.00                     |                     | 3074                                 |
| Ramp   | 1050                             | 0.93                          | Level                               | 4  | 0                                   | 0.980                                      | 1.00                     |                     | 1152                                 |
| UpStream<br>DownStream                         | 440                              | 0.87                          | Level                               | 1  | 0                                   | 0.995                                      | 1.00                     | +                   | 508                                  |
| JownStream                                     | <u> </u>                         | Merge Areas                   |                                     |  |                                     |  | Diverge Area             |                     |                                      |
| Estimation o                                   |                                  | Werge Areas                   |                                     |  | Estimati                            | ion of v <sub>12</sub>                     |                          | 13                  |                                      |
|  | V <sub>12</sub> = V <sub>F</sub> | (D)                           |                                     |  |                                     |  |                          |                     |                                      |
| _  |                                  |                               | OF 2\                               |  |                                     | V <sub>12</sub>                            | $= V_R + (V_F -$         |                     |                                      |
| EQ =   |                                  | ation 25-2 or 2               |                                     |  | L <sub>EQ</sub> =                   |  | (Equation                |                     |                                      |
| ) <sub>FM</sub> =                              |                                  | using Equation                | on (Exhibit 25-5)                   | )  | P <sub>FD</sub> =                   |  | using Equa               | ation (Exhibi       | t 25-12)                             |
| 1 <sub>12</sub> =                              | 1853                             | pc/n<br>pc/h (Equatioı        | 25 4 or 25                          |  | V <sub>12</sub> =                   |  | pc/h                     |                     |                                      |
| $V_3$ or $V_{av34}$                            | 5)                               | pc/ii (Equatioi               | 125-4 01 25-                        |  | $V_3$ or $V_{av34}$                 |  | pc/h (Equation           |                     | 5-16)                                |
| s $V_3$ or $V_{av34} > 2,70$                   | 00 pc/h?                         | s 🗹 No                        |                                     |  |                                     |  | ? ☐ Yes ☐ I              |                     |                                      |
| s $V_3$ or $V_{av34} > 1.5$                    | * V <sub>12</sub> /2             | s 🗹 No                        |                                     |  |                                     |  | ☐ Yes ☐                  |                     |                                      |
| Yes,V <sub>12a</sub> =                         | pc/h                             | (Equation 25-                 | 8)                                  |  | If Yes,V <sub>12a</sub> =           |  | pc/h (Equa               | ation 25-18         | )                                    |
| Capacity Che                                   | ecks                             |                               |                                     |  | Capacity                            | y Checks                                   |                          |                     |                                      |
|  | Actual                           | Ca                            | pacity                              | LOS F?                                     |                                     | Actu                                       | ıal                      | Capacity            | LOS F                                |
|  |                                  |                               |                                     |  | $V_{F}$                             |  | Exhibit 2                | 25-14               |                                      |
| $V_{FO}$                                       | 4226                             | Exhibit 25-7                  |                                     | No   | $V_{FO} = V_{F}$                    | - V <sub>R</sub>                           | Exhibit 2                | 25-14               |                                      |
|  |                                  |                               |                                     |  | V <sub>R</sub>                      |  | Exhibit 2                | 25-3                |                                      |
| Flow Entering                                  | a Merae In                       | fluence Ar                    | ea                                  |  | <u>'</u>                            | terina Di                                  | verge Influ              | ence Ar             | <u></u>                              |
|  | Actual                           |                               | esirable                            | Violation?                                 |                                     | Actual                                     |                          | esirable            | Violation?                           |
| V <sub>R12</sub>                               | 3005                             | Exhibit 25-7                  | 4600:All                            | No   | V <sub>12</sub>                     |  | Exhibit 25-1             | 4                   |                                      |
| Level of Serv                                  | ice Deterr                       | nination (if                  | not F)                              |  | <del></del>                         | Service I                                  | Determina                | tion (if n          | ot F)                                |
|  |                                  | 0.0078 V <sub>12</sub> - 0.00 |                                     |  | 1                                   |  | + 0.0086 V <sub>12</sub> | <del></del>         |                                      |
| ) <sub>R</sub> = 22.7 (pc                      | :/mi/ln)                         | · <del>-</del>                | ••                                  |  |                                     | c/mi/ln)                                   |                          | 5                   |                                      |
|  | bit 25-4)                        |                               |                                     |  |                                     | xhibit 25-4)                               |                          |                     |                                      |
| Speed Deteri                                   |                                  |                               |                                     |  | `                                   | Petermina                                  | tion                     |                     |                                      |
| $M_{\rm S} = 0.328  (Ex)$                      |                                  |                               |                                     |  | <del></del>                         | xhibit 25-19)                              | -                        |                     |                                      |
| -  | (Exhibit 25-19)                  |                               |                                     |  |                                     | ph (Exhibit 25-                            | 19)                      |                     |                                      |
|  |                                  |                               |                                     |  |                                     | ph (Exhibit 25-                            |                          |                     |                                      |
| 0= 53.4 mph (Exhibit 25-19)                    |                                  | ľ                             |                                     | •  |                                     |  |                          |                     |                                      |
|  | = 52.0 mph (Exhibit 25-14)       |                               |                                     | IS = mi                                    | ph (Exhibit 25-                     | 15)  |                          |                     |                                      |

|   | R/                           | MPS AND            | RAMP JUNG                | CTIONS W   | ORKSHE   | ET   |         |  |          |                                    |
|---|------------------------------|--------------------|--------------------------|--|--|--|---------|--|----------|------------------------------------|
| General Int   |                              |                    |                          | Site Infor   |  |  |         |  |          |                                    |
| Analyst<br>Agency or Comp<br>Date Performed<br>Analysis Time Pe | 9/0<br>eriod PM              | A<br>8/2011        | Ju<br>Ju                 | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | ]<br>]   | Southbound<br>Exit 5 SB Oi<br>NYSDOT<br>2016 No-Bu | n-Ramp  |  |          |                                    |
| Project Description   | ON EXIT4                     |                    |                          |  |  |  |         |  |          |                                    |
| Inputs  |                              | Terrain: Leve      | <u> </u>                 |  |  |  |         | Бол  | motro    | am Adj                             |
| Upstream Adj Ra   | •                            |                    |                          |  |  |  |         | Ran  |          | ani Auj                            |
| ☐ Yes ☐   | On                           |                    |                          |  |  |  |         | V .  | res      | ✓ On                               |
| ✓ No  | Off                          |                    |                          |  |  |  |         |  |          | ☐ Off                              |
|   |                              |                    |                          |  |  |  |         |  |          |                                    |
| L <sub>up</sub> = ft  |                              | 5                  | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4                                      | 0 0 mnh  |         | Ldowr  | 1 -      | 2035 ft                            |
| V <sub>u</sub> = ve   | h/h                          |                    | • •                      | show lanes, L <sub>A</sub> ,                           |  | o.o mpn  |         | V <sub>D</sub> =                                 | =        | 1050 veh/h                         |
| Conversion  | n to pc/h Ur                 | nder Base (        |                          | A,   | D' R' I'   |  |         |  |          |                                    |
| (pc/h)  | V                            | PHF                | Terrain                  | %Truck   | %Rv  | f  | f       | f <sub>D</sub> v = '                             | //PHI    | x f <sub>HV</sub> x f <sub>p</sub> |
|   | (Veh/hr)                     |                    |                          |  | ļ  | f <sub>HV</sub>                                    |         |  |          | · ·                                |
| Freeway   | 2550                         | 0.92               | Level                    | 2  | 0  | 0.990  | 1.0     |  |          | 2799                               |
| Ramp<br>UpStream  | 440                          | 0.87               | Level                    | 1  | 0  | 0.995  | 1.0     | 00   |          | 508                                |
| DownStream  | 1050                         | 0.93               | Level                    | 4  | 0  | 0.980  | 1.0     | 00   |          | 1152                               |
|   |                              | Merge Areas        |                          |  |  |  |         | e Areas  |          |                                    |
| Estimation  | of v <sub>12</sub>           |                    |                          |  | Estimati   | on of v  | 12      |  |          |                                    |
|   | V <sub>12</sub> = V          | (P <sub>EM</sub> ) |                          |  |  | \/   |         | (V <sub>F</sub> - V <sub>R</sub> )P <sub>F</sub> |          |                                    |
| L <sub>EQ</sub> =   | (Eq                          | uation 25-2 or     | 25-3)                    |  | l =  | v  |         | tion 25-8 o                                      | _        | 2)                                 |
| P <sub>FM</sub> =   | 0.603                        | using Equat        | ion (Exhibit 25-5)       |  | L <sub>EQ</sub> =<br>P <sub>FD</sub> =                   |  |         | Equation (                                       |          |                                    |
| V <sub>12</sub> =   |                              | pc/h               |                          |  | V <sub>12</sub> =  |  | pc/h    | Equation (                                       | LATIIDIC | 25-12)                             |
| V <sub>3</sub> or V <sub>av34</sub>                             | 1112                         | pc/h (Equation     | on 25-4 or 25-           |  | V <sub>12</sub> –<br>V <sub>3</sub> or V <sub>av34</sub> |  | -       | Equation 25-1                                    | 5 or 25  | i-16)                              |
|   | 5)                           |                    |                          |  | Is V <sub>3</sub> or V <sub>av3</sub>                    | > 2.700 pc   |         |  | 0 01 20  | , 10)                              |
|   | 2,700 pc/h?                  |                    |                          |  | Is V <sub>3</sub> or V <sub>av3</sub>                    | -  |         |  |          |                                    |
|   | 1.5 * V <sub>12</sub> /2     |                    | . 0)                     |  | If Yes,V <sub>12a</sub> =                                |  | =       | Equation 2                                       | 5-18)    |                                    |
| If Yes,V <sub>12a</sub> =<br>Capacity C                         |                              | n (Equation 25     | 1-8)                     |  | Capacity   |  |         |  |          |                                    |
| Сараспу С   | Actual                       |                    | apacity                  | LOS F?   | Capacity   |  | ctual   | Capaci   | tv       | LOS F?                             |
|   | ricidal                      | ŤĬ                 | араску                   | 2001.  | V <sub>F</sub>   |  |         | thibit 25-14                                     | · y      | 2031.                              |
| V <sub>FO</sub>   | 3307                         | Exhibit 25-7       |                          | No   | $V_{FO} = V_{F}$   | - V <sub>2</sub>                                   |         | hibit 25-14                                      |          |                                    |
| . 40  | 3307                         | EXHIBIT 25 7       |                          | 140  | V <sub>R</sub>   | · R  |         | thibit 25-3                                      |          | +                                  |
| Flow Entor  | ing Merge I                  | Influence A        | roa                      | <u> </u>   |  | toring [   |         | nfluence   | Δκο      | <u> </u>                           |
| I IOW LIILEI  | Actual                       | T T                | Desirable                | Violation?   | I IOW LII  | Actual   |         | Max Desirable                                    |          | Violation?                         |
| V <sub>R12</sub>  | 2195                         | Exhibit 25-7       | 4600:All                 | No   | V <sub>12</sub>  | , .5.00  | Exhibit |  |          | 1.0.00011                          |
| Level of Se   | ervice Deter                 | mination (         | f not F)                 | <u> </u>   | -  | Service  |         | nination (                                       | if no    | ot F)                              |
|   | 5 + 0.00734 v <sub>R</sub> + |                    |                          |  |  |  |         | 5 V <sub>12</sub> - 0.00                         |          |                                    |
| 13  | (pc/mi/ln)                   | 12                 | n                        |  | L  | c/mi/ln)   |         |  | U        |                                    |
| IX.   | xhibit 25-4)                 |                    |                          |  |  | xhibit 25-   | 4)      |  |          |                                    |
|   | ermination                   |                    |                          |  | Speed D  |  | •       |  |          |                                    |
| •   | (Exibit 25-19)               |                    |                          |  |  | xhibit 25-19                                       |         |  |          |                                    |
| o .   | ph (Exhibit 25-19)           | )                  |                          |  |  | oh (Exhibit 2                                      |         |  |          |                                    |
|   | ph (Exhibit 25-19            |                    |                          |  | $S_0$ = mph (Exhibit 25-19)                              |  |         |  |          |                                    |
| U   | ph (Exhibit 25-14            |                    |                          |  | 1 -  | oh (Exhibit 2                                      | •       |  |          |                                    |
|   |                              | •                  |                          |  | ,  | ,  | •       |  |          |                                    |

|  |   |                                       | FREEWA                | Y WEAV       | ING WOR  | KSHEE          | Т               |  |              |  |
|--|---|---------------------------------------|-----------------------|--------------|--|----------------|-----------------|--|--------------|--|
| General  | Informat  | ion                                   |                       |              | Site Info  | rmation        |                 |  |              |  |
| Analyst<br>Agency/Cor<br>Date Perfor<br>Analysis Tin | med   | SEB<br>CHA<br>9/08/2<br>PM            | 011                   |              | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | Exit 2<br>NYSD  | I-87 Northbound<br>Exit 2E on to 2W off<br>NYSDOT<br>2016 No-Build |              |  |
| Inputs   |   |                                       |                       |              |  |                |                 |  |              |  |
| Weaving nu   | e-flow speed,<br>mber of lanes,<br>g length, L (ft) |                                       | 56<br>4<br>815<br>Lev |              | Weaving type<br>Volume ratio,<br>Weaving ratio             | , VR           |                 | A<br>0.:<br>0.:  | 25<br>34     |  |
| Conver   | sions to p  | c/h Unde                              | er Base C             | ondition     |  | r              |                 | 1  |              |  |
| (pc/h)   | V   | PHF                                   | Truck %               | RV %         | E <sub>T</sub>   | E <sub>R</sub> | f <sub>HV</sub> | fp   | V            |  |
| $V_{o1}$   | 3930  | 0.86                                  | 2                     | 0            | 1.5  | 1.2            | 0.990           | 1.00   | 4615         |  |
| $V_{o2}$   | 0   | 0.92                                  | 2                     | 0            | 1.5  | 1.2            | 0.990           | 1.00   | 0            |  |
| $V_{w1}$   | 900   | 0.92                                  | 2                     | 0            | 1.5  | 1.2            | 0.990           | 1.00   | 988          |  |
| $V_{w2}$   | 470   | 0.92                                  | 2                     | 0            | 1.5  | 1.2            | 0.990           | 1.00   | 515          |  |
| $V_{\rm w}$  |   |                                       |                       | 1503         | V <sub>nw</sub>  |                |                 |  | 4615         |  |
| V  | 7   |                                       |                       |              | ,  | ı              |                 |  | 6118         |  |
| Weavin   | g and No  | n-Weavin                              | g Speeds              | 3            |  |                |                 |  |              |  |
|  |   |                                       | Unconstr              |              |  |                |                 | trained  |              |  |
| a (Exhibit 24  | 1.6)  | Weaving<br>0.15                       |                       |              | ving (i = nw)<br>1035                                      | Weavir         | ng (i = w)      | Non-Wea  | ving ( = nw) |  |
| b (Exhibit 24  |   | 2.20                                  |                       |              | .00  |                |                 |  |              |  |
| c (Exhibit 24  |   | 0.97                                  |                       | <del>}</del> | .30  |                |                 |  |              |  |
| d (Exhibit 24  | l-6)  | 0.80                                  | )                     | 0.           | .75  |                |                 | ĺ  |              |  |
| Weaving intensi                                      |   | 1.40                                  | )                     | 0.           | .76  |                |                 |  |              |  |
| Weaving and no<br>speeds, Si (mi/h                   |   | 34.1                                  | 7                     | 41           | .10  |                |                 |  |              |  |
|  | anes required                                       |                                       | ned operation,        | Nw           | 1.36   |                |                 |  |              |  |
| 1  | umber of lanes If Nw < Nw                           | , ,                                   | trained aperat        | ion          | 1.40   | if Nw > Nv     | v (max) consti  | rained aperati   | ion          |  |
|  |   | <u> </u>                              |                       |              | f Service,   |                |                 | iairieu uperati  | IUII         |  |
|  | gment speed,  |                                       |                       | 39.15        | OGIVICE,   | unu vap        | acity           |  |              |  |
|  | gment density,                                      |                                       |                       | 39.07        |  |                |                 |  |              |  |
| Level of ser   |   | м /                                   |                       | E            |  |                |                 |  |              |  |
|  | base condition                                      | ı, c <sub>h</sub> (pc/h)              |                       | 6490         |  |                |                 |  |              |  |
|  | a 15-minute fl                                      | <u> </u>                              | n/h)                  | 6426         |  |                |                 |  |              |  |
| Capacity as  | a full-hour vol                                     | ume, c <sub>h</sub> (veh/h            | 1)                    | 5626         |  |                |                 |  |              |  |
| Notes  |   | · · · · · · · · · · · · · · · · · · · |                       |              |  |                |                 |  |              |  |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|   |   |                              | FREEWA                | Y WEAV   | ING WOF  | RKSHEE   | Γ               |  |              |  |
|---|---|------------------------------|-----------------------|----------|--|--|-----------------|--|--------------|--|
| General   | Informat  | ion                          |                       |          | Site Info  | rmation  |                 |  |              |  |
| Analyst<br>Agency/Con<br>Date Perforr<br>Analysis Tim | ned   | SEB<br>CHA<br>6/22/2<br>PM   | 011                   |          | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | g Location                                       | Exit 2'<br>NYSD | I-87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2016 No-Build |              |  |
| Inputs  |   |                              |                       |          |  |  |                 |  |              |  |
| Weaving nu  | e-flow speed,<br>mber of lanes,<br>g length, L (ft) |                              | 56<br>4<br>810<br>Lev |          | Weaving typo<br>Volume ratio<br>Weaving rati               | , VR   |                 | A<br>0.2<br>0.2  |              |  |
| Convers   | sions to p  | c/h Unde                     | r Base C              | ondition | าร   |  |                 |  |              |  |
| (pc/h)  | V   | PHF                          | Truck %               | RV %     | E <sub>T</sub>   | E <sub>R</sub>                                   | $f_{HV}$        | fp   | V            |  |
| V <sub>o1</sub>                                       | 3080  | 0.92                         | 2                     | 0        | 1.5  | 1.2  | 0.990           | 1.00   | 3381         |  |
| $V_{o2}$  | 0   | 0.92                         | 2                     | 0        | 1.5  | 1.2  | 0.990           | 1.00   | 0            |  |
| V <sub>w1</sub>                                       | 800   | 0.92                         | 2                     | 0        | 1.5  | 1.2  | 0.990           | 1.00   | 878          |  |
| V <sub>w2</sub>                                       | 270   | 0.92                         | 2                     | 0        | 1.5  | 1.2  | 0.990           | 1.00   | 296          |  |
| V <sub>w</sub>  |   |                              |                       | 1174     | $V_{nw}$   |  |                 |  | 3381         |  |
| V   | 1   |                              |                       |          | 1 iiw  | J  |                 |  | 4555         |  |
| Weaving   | g and No  | n-Weavin                     | g Speeds              | <u> </u> |  |  |                 |  |              |  |
|   |   |                              | Unconstr              |          |  |  |                 | trained  |              |  |
| <u> </u>  |   | Weaving                      |                       |          | ving (i = nw)  | Weavir   | ng (i = w)      | Non-Wea  | ving ( = nw) |  |
| a (Exhibit 24<br>b (Exhibit 24                        |   | 0.15<br>2.20                 |                       |          | .00  |  |                 |  |              |  |
| c (Exhibit 24   |   | 0.97                         |                       | <u> </u> | .30  |  |                 |  |              |  |
| d (Exhibit 24   |   | 0.80                         |                       |          | .75  |  |                 |  |              |  |
| Weaving intensit                                      |   | 1.08                         |                       | 1        | .54  | <del>                                     </del> |                 |  |              |  |
| Weaving and no<br>speeds, Si (mi/h                    | n-weaving   | 37.1                         |                       | <b>†</b> | 1.82   |  |                 |  |              |  |
|   |   | for unconstrain              | ned operation,        | Nw       | 1.34   | <u>!</u>   |                 | !  |              |  |
| 1   | umber of lanes                                      | , ,                          |                       |          | 1.40   | _  |                 |  |              |  |
|   |   | (max) uncons                 |                       |          |  |  | v (max) constr  | rained operati   | on           |  |
|   |   | <b>it Speed,</b><br>S (mi/h) |                       | 42.55    | f Service,   | and Cap  | acity           |  |              |  |
|   | gment density,                                      |                              |                       | 26.76    |  |  |                 |  |              |  |
| Level of serv   |   | , υ (μωπιπη)                 |                       | C C      |  |  |                 |  |              |  |
|   | base condition                                      | ı, c <sub>h</sub> (pc/h)     |                       | 6416     |  |  |                 |  |              |  |
|   |   | ow rate, c (vel              | n/h)                  | 6352     |  |  |                 |  |              |  |
| <u> </u>  |   | ume, c <sub>h</sub> (veh/r   |                       | 5844     |  |  |                 |  |              |  |
| Notes   |   | 11.                          | -                     |          |  |  |                 |  |              |  |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

#### Average Passenger-Car Speed (mith) Froe-Flow Spred FFS = 75 min Application Input Output 70 miih 70 Operational (LOS) FFS, N, vo LOS, S, D 65 midt 60 mish Design (N) FFS, LOS, Va N, S, D 60 55 milh Design (v<sub>o</sub>) FFS, LOS, N Vp. S. D 50 Planning (LOS) FFS, N, AADT LOS, S, D FFS, LOS, AADT Planning (N) N, S, D 40 Planning (v<sub>n</sub>) FFS. LOS. N v<sub>p</sub>, S, D 30 400 200 1200 1600 2000 2400 Flow Rate (pc/h/ln) General Information Site Information Analyst SEB Highway/Direction of Travel Northbound I-87 Agency or Company CHA From/To Exit 2 to Exit 4 Date Performed 6/22/2011 Jurisdiction NYSDOT Analysis Time Period PMAnalysis Year 2026 No-Build Project Description Exit 4 Oper.(LOS) 「Des.(N) Planning Data Flow Inputs Volume, V 5150 Peak-Hour Factor, PHF veh/h 0.86 AADT %Trucks and Buses, P<sub>T</sub> veh/day 2 %RVs, P<sub>R</sub> 0 Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop. D General Terrain: Level DDHV = AADT x K x Dveh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments 1.00 $E_R$ 1.2 $E_{T}$ 1.5 $f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]$ 0.990 Speed Inputs Calc Speed Adj and FFS ane Width 12.0 ft $f_{LW}$ mi/h Rt-Shoulder Lat. Clearance 6.0 ft $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h Number of Lanes, N 3 $f_N$ mi/h FFS (measured) 56.0 mi/h FFS 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_n = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times V)$ 2016 v<sub>n</sub> = (V or DDHV) / (PHF x N x f<sub>HV</sub> x pc/h/ln t<sub>p</sub>) pc/h 54.8 mi/h mi/h $D = v_n / S$ 36.8 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS E Required Number of Lanes, N Glossary Factor Location N - Number of lanes S - Speed E<sub>R</sub> - Exhibits23-8, 23-10 f<sub>IW</sub> - Exhibit 23-4 V - Hourly volume D - Density E<sub>T</sub> - Exhibits 23-8, 23-10, 23-11 f<sub>LC</sub> - Exhibit 23-5 - Flow rate FFS - Free-flow speed f<sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 BFFS - Base free-flow speed LOS - Level of service LOS, S, FFS, v<sub>n</sub> - Exhibits 23-2, 23-3 f<sub>ID</sub> - Exhibit 23-7

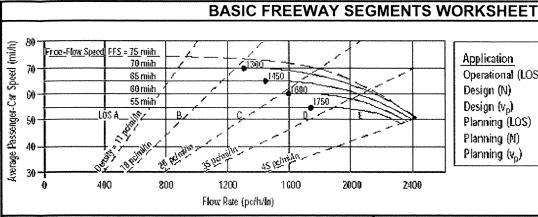
**BASIC FREEWAY SEGMENTS WORKSHEET** 

DDHV - Directional design hour volume

#### BASIC FREEWAY SEGMENTS WORKSHEET Average Passenger-Car Speed (mith) Free-Flow Spred FFS = 75 mith Application Input Output 70 miih 70 Operational (LOS) FFS, N, v<sub>D</sub> LOS, S, D 65 mish 60 mid Design (N) FFS, LOS, v, N, S, D 60 55 min Design (v<sub>o</sub>) FFS, LOS, N vp. S. D 50 FFS, N, AADT LOS, S, D Planning (LOS) Planning (M) FFS, LOS, AADT N, S, D Planning (v<sub>n</sub>) FFS, LOS, N v<sub>p</sub>. S. D 30 400 200 1200 1600 2000 2400 Flow Rate (pc/h/lin) General Information Site Information Highway/Direction of Travel Analyst SEB Southbound I-87 Agency or Company CHA From/To Exit 4 to Exit 2 Date Performed Jurisdiction 6/22/2011 NYSDOT Analysis Time Period PMAnalysis Year 2026 No-Build Project Description Exit 4 Des.(N) Oper.(LOS) ☐ Planning Data Flow Inputs Volume, V 3950 veh/h Peak-Hour Factor, PHF 0.92 AADT %Trucks and Buses, P<sub>⊤</sub> veh/day 2 0 Peak-Hr Prop. of AADT, K %RVs, P<sub>R</sub> Peak-Hr Direction Prop, D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments $\mathsf{E}_\mathsf{R}$ 1.00 1.2 $E_{T}$ 1.5 0.990 $f_{HV} = 1/[1+P_T(E_T-1) + P_R(E_R-1)]$ Calc Speed Adj and FFS Speed Inputs ane Width 12.0 ft $f_{LW}$ mi/h Rt-Shoulder Lat. Clearance 6.0 ft $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h Number of Lanes, N 3 mi/h $f_N$ FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h

|  | -   |                             | •  |   |
|--|---|-----------------------------|--|---|
| LOS and Performance  | e Measures  |                             | Design (N)   |   |
| Operational (LOS)  v <sub>p</sub> = (V or DDHV) / (PHF x N f <sub>p</sub> ) S D = v <sub>p</sub> / S LOS | N x f <sub>HV</sub> x<br>1445<br>56.0<br>25.8<br>C    | pc/h/ln<br>mi/h<br>pc/mi/ln | Design (N) Design LOS  v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x  f <sub>p</sub> ) S D = v <sub>p</sub> / S Required Number of Lanes, N                | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |   |                             | Factor Location  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service                  | S - Speed D - Density FFS - Free-flow BFFS - Base fre |                             | E <sub>R</sub> - Exhibits23-8, 23-10<br>E <sub>T</sub> - Exhibits 23-8, 23-10, 23-11<br>f <sub>p</sub> - Page 23-12<br>LOS, S, FFS, v <sub>p</sub> - Exhibits 23-2, 23-3 | f <sub>LW</sub> - Exhibit 23-4<br>f <sub>LC</sub> - Exhibit 23-5<br>f <sub>N</sub> - Exhibit 23-6<br>f <sub>ID</sub> - Exhibit 23-7 |

DDHV - Directional design hour volume



| Application                | <u>Input</u>             | Output    |
|----------------------------|--------------------------|-----------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D |
| Design (N)                 | FFS, LOS, V <sub>p</sub> | N, S, D   |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | VD. S. D  |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D |
| Planning (M)               | FFS, LOS, AADT           | N, S, D   |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | VD, S, D  |

|   | Linux kere theurin      | •             |  |                      |                                |
|---|-------------------------|---------------|--|----------------------|--------------------------------|
| General Information                           |                         |               | Site Information                             |                      |                                |
| Analyst                                       | SEB                     |               | Highway/Direction of Travel                  | Northbo              | und I-87                       |
| Agency or Company                             | CHA                     |               | From/To                                      | Exit 4 of            | f to Exit 4 on                 |
| Date Performed                                | 9/09/2011               |               | Jurisdiction                                 | NYSDO                | T                              |
| Analysis Time Period                          | PM                      |               | Analysis Year                                | 2026 No              | o-Build                        |
| Project Description Exit 4                    |                         |               |  |                      |                                |
| ✓ Oper.(LOS)                                  |                         |               | Des.(N)                                      | □ Pla                | inning Data                    |
| Flow Inputs                                   |                         |               |  |                      |                                |
| Volume, V                                     | 4500                    | veh/h         | Peak-Hour Factor, PHF                        | 0.86                 |                                |
| AADT  |                         | veh/day       | %Trucks and Buses, P <sub>T</sub>            | 2                    |                                |
| Peak-Hr Prop. of AADT, K                      |                         |               | %RVs, P <sub>R</sub>                         | 0                    |                                |
| Peak-Hr Direction Prop, D                     |                         | 1.0           | General Terrain:                             | Level                |                                |
| DDHV = AADT x K x D                           | 1.00                    | veh/h         | Grade % Length<br>Up/Down %                  | mi                   |                                |
| Driver type adjustment Calculate Flow Adjustm |                         |               | Op/Down 78                                   |                      |                                |
|   | 1.00                    |               | E <sub>R</sub>                               | 1.2                  |                                |
| f <sub>p</sub>                                |                         |               |  |                      |                                |
| E <sub>T</sub>                                | 1.5                     |               | $f_{HV} = 1/[1+P_T(E_T-1)+P_R(E_R-1)]$       | 0.990                |                                |
| Speed Inputs                                  |                         |               | Calc Speed Adj and FF                        | S                    |                                |
| _ane Width                                    | 12.0                    | ft            | $f_{LW}$                                     |                      | mi/h                           |
| Rt-Shoulder Lat. Clearance                    | 6.0                     | ft            | $f_{LC}$                                     |                      | mi/h                           |
| nterchange Density                            | 0.50                    | I/mi          | f <sub>ID</sub>                              |                      | mi/h                           |
| Number of Lanes, N                            | 3                       |               |  |                      | mi/h                           |
| FFS (measured)                                | 56.0                    | mi/h          | f <sub>N</sub>                               |                      |                                |
| Base free-flow Speed, BFFS                    |                         | mi/h          | FFS  | 56.0                 | mi/h                           |
| LOS and Performance I                         | Measures                |               | Design (N)                                   |                      |                                |
| 0   |                         |               | Design (N)                                   |                      |                                |
| Operational (LOS)                             |                         |               | Design LOS                                   |                      |                                |
| $v_p = (V \text{ or DDHV}) / (PHF x N x)$     | <sup>(†</sup> HV X 1762 | pc/h/ln       | $v_p = (V \text{ or DDHV}) / (PHF \times N)$ | cf <sub>av</sub> , x |                                |
| (p)   |                         | <b>F</b>      | 1 *  | ΠV                   | pc/h                           |
| 3   | 56.0                    | mi/h          | f <sub>p</sub> )<br>S                        |                      | mi/h                           |
| $D = v_p / S$                                 | 31.5                    | pc/mi/ln      |  |                      |                                |
| LOS   | D                       |               | $D = v_p / S$                                | •                    | pc/mi/ln                       |
| <u></u>                                       |                         |               | Required Number of Lanes, N                  |                      |                                |
| Glossary                                      |                         |               | Factor Location                              |                      |                                |
| N - Number of lanes                           | S - Speed               |               | E <sub>R</sub> - Exhibits23-8, 23-10         |                      | f <sub>LW</sub> - Exhibit 23-4 |
| V - Hourly volume                             | D - Density             |               | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-   | 11                   | f <sub>LC</sub> - Exhibit 23-5 |
| / <sub>p</sub> - Flow rate                    | FFS - Free-flow         | / speed       | <b>1</b> '                                   | . ,                  | $f_N$ - Exhibit 23-6           |
| OS - Level of service                         | BFFS - Base fre         | ee-flow speed | f <sub>p</sub> - Page 23-12                  | 2 22 2               | , ,                            |
| DDHV - Directional design hoเ                 | ır volumo               |               | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | Z, ZJ-J              | f <sub>ID</sub> - Exhibit 23-7 |

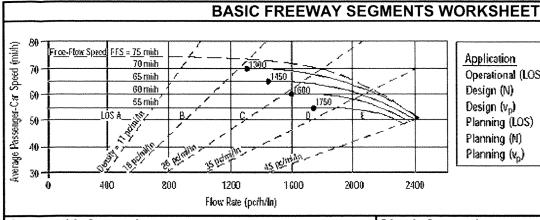
# **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (milh) FFS = 75 midt 70 midt F<u>ree-</u>Flow Speed 70 65 mid 60 miih 60 55 midti 30 400 800 1200 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> , S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>n</sub> ) | FFS, LOS, N              | v <sub>p</sub> , S, D |

| General Information                           |                          |                                       | Site Information                             |          |                                |  |  |  |
|---|--------------------------|---------------------------------------|--|----------|--------------------------------|--|--|--|
| Analyst                                       | SEB                      |                                       | Highway/Direction of Travel                  | Southbo  | ound I-87                      |  |  |  |
| Agency or Company                             | CHA                      |                                       | From/To                                      | Exit 5 o | n to Exit 4 on                 |  |  |  |
| Date Performed                                | 12/09/2011               |                                       | Jurisdiction                                 | NYSDC    | )T                             |  |  |  |
| Analysis Time Period                          | PM                       |                                       | Analysis Year                                | 2026 No  | o-Build                        |  |  |  |
| Project Description Exit 4                    |                          |                                       |  |          |                                |  |  |  |
| ✓ Oper.(LOS)                                  |                          |                                       | Des.(N)                                      | □ Pla    | anning Data                    |  |  |  |
| Flow Inputs                                   |                          |                                       |  |          |                                |  |  |  |
| Volume, V                                     | 2850                     | veh/h                                 | Peak-Hour Factor, PHF                        | 0.92     |                                |  |  |  |
| AADT  |                          | veh/day                               | %Trucks and Buses, $P_T$                     | 2        |                                |  |  |  |
| Peak-Hr Prop. of AADT, K                      |                          |                                       | %RVs, P <sub>R</sub>                         | 0        |                                |  |  |  |
| Peak-Hr Direction Prop, D                     |                          |                                       | General Terrain:                             | Level    |                                |  |  |  |
| DDHV = AADT x K x D                           | 1.00                     | veh/h                                 | Grade % Length                               | mi       |                                |  |  |  |
| Driver type adjustment Calculate Flow Adjustr |                          | · · · · · · · · · · · · · · · · · · · | Up/Down %                                    |          |                                |  |  |  |
|   | 1.00                     |                                       |  | 1.2      |                                |  |  |  |
| f <sub>p</sub>                                |                          |                                       | E <sub>R</sub>                               |          |                                |  |  |  |
| E <sub>T</sub>                                | 1.5                      |                                       | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990    |                                |  |  |  |
| Speed Inputs                                  |                          |                                       | Calc Speed Adj and FF                        | <u>S</u> |                                |  |  |  |
| Lane Width                                    | 12.0                     | ft                                    | f <sub>LW</sub>                              |          | mi/h                           |  |  |  |
| Rt-Shoulder Lat. Clearance                    | 6.0                      | ft                                    | f <sub>LC</sub>                              |          | mi/h                           |  |  |  |
| Interchange Density                           | 0.50                     | I/mi                                  |  |          |                                |  |  |  |
| Number of Lanes, N                            | 3                        |                                       | f <sub>ID</sub>                              |          | mi/h                           |  |  |  |
| FFS (measured)                                | 56.0                     | mi/h                                  | f <sub>N</sub>                               |          | mi/h                           |  |  |  |
| Base free-flow Speed, BFFS                    |                          | mi/h                                  | FFS  | 56.0     | mi/h                           |  |  |  |
| LOS and Performance                           |                          |                                       | Design (N)                                   |          |                                |  |  |  |
|   |                          |                                       | Design (N)                                   |          |                                |  |  |  |
| Operational (LOS)                             |                          |                                       | Design LOS                                   |          |                                |  |  |  |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$       | x f <sub>HV</sub> x 1043 | pc/h/ln                               | $v_p = (V \text{ or DDHV}) / (PHF \times N)$ | v f v    |                                |  |  |  |
| f <sub>p</sub> )                              | 1043                     | ролили                                | <sup>r</sup>                                 | ` 'HV ^  | pc/h                           |  |  |  |
| S   | 56.0                     | mi/h                                  | $f_p$ )                                      |          | - 4                            |  |  |  |
| D = v <sub>p</sub> / S                        | 18.6                     | pc/mi/ln                              | S  |          | mi/h                           |  |  |  |
| LOS   | С                        | •                                     | D = v <sub>p</sub> / S                       |          | pc/mi/ln                       |  |  |  |
|   | -                        |                                       | Required Number of Lanes, N                  | 1        |                                |  |  |  |
| Glossary                                      |                          |                                       | Factor Location                              |          |                                |  |  |  |
| N - Number of lanes                           | S - Speed                |                                       | E Evhibite 22 9 22 10                        |          | f Evhihit 22.4                 |  |  |  |
| V - Hourly volume                             | D - Density              |                                       | E <sub>R</sub> - Exhibits 23-8, 23-10        | 4.4      | f <sub>LW</sub> - Exhibit 23-4 |  |  |  |
| v <sub>o</sub> - Flow rate                    | FFS - Free-flow          | v speed                               | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-   | 11       | f <sub>LC</sub> - Exhibit 23-5 |  |  |  |
| LOS - Level of service                        | BFFS - Base fr           |                                       | f <sub>p</sub> - Page 23-12                  |          | f <sub>N</sub> - Exhibit 23-6  |  |  |  |
| DDHV - Directional design ho                  |                          | opood                                 | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | -2, 23-3 | f <sub>ID</sub> - Exhibit 23-7 |  |  |  |
| ייסכ וויסכוייי יייסכוייי יייסכויייייייייי     |                          | *****                                 |  |          |                                |  |  |  |

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## Average Passenger-Car Speed (mith) Free-Flow Spreed FFS = 75 minh Application nput Output 70 miih 70 Operational (LOS) FFS, N, VD LOS, S, D 65 mich 60 mith Design (N) FFS, LOS, Vn N, S, D 60 55 min FFS, LOS, N Design (v<sub>p</sub>) v<sub>p</sub>, S, D 50 Planning (LOS) FFS, N, AADT LOS, S, D Planning (M) FFS, LOS, AADT N, S, D 40 Planning (v<sub>o</sub>) FFS, LOS, N v<sub>p</sub>, S, D 30 008 400 1200 1600 2400 2000 Flow Rate (pc/h/lin) General Information Site Information Analyst Highway/Direction of Travel SEB Northbound I-87 Agency or Company CHA From/To Exit 4 to Exit 5 Date Performed Jurisdiction 6/22/2011 NYSDOT Analysis Time Period PMAnalysis Year 2026 No-Build Project Description Exit 4 Oper.(LOS) □ Des.(N) □ Planning Data Flow Inputs Volume, V 5950 Peak-Hour Factor, PHF veh/h 0.86 AADT veh/dav %Trucks and Buses, P<sub>⊤</sub> 2 0 Peak-Hr Prop. of AADT, K %RVs, P<sub>R</sub> Peak-Hr Direction Prop, D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments 1.00 $E_R$ $f_p$ 1.2 $E_{T}$ 1.5 $f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]$ 0.990 Speed Inputs Calc Speed Adj and FFS ane Width 12.0 ft $f_{LW}$ mi/h Rt-Shoulder Lat. Clearance 6.0 ft $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h Number of Lanes, N 3 $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_n = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 2329 $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ pc/h/ln $f_p$ pc/h mi/h mi/h $D = v_{D} / S$ pc/mi/ln $D = v_n / S$ pc/mi/ln LOS F Required Number of Lanes, N Glossary Factor Location S - Speed N - Number of lanes E<sub>R</sub> - Exhibits23-8, 23-10 f<sub>IW</sub> - Exhibit 23-4 - Hourly volume D - Density E<sub>T</sub> - Exhibits 23-8, 23-10, 23-11 f<sub>IC</sub> - Exhibit 23-5 Flow rate FFS - Free-flow speed f<sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 BFFS - Base free-flow speed LOS - Level of service LOS, S, FFS, v<sub>p</sub> - Exhibits 23-2, 23-3 f<sub>ID</sub> - Exhibit 23-7 DDHV - Directional design hour volume



| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (N)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> , S, D |

|  | raow kate (pom/a           | !!)          |  |             |                                |  |  |  |
|--|----------------------------|--------------|--|-------------|--------------------------------|--|--|--|
| General Information                              |                            |              | Site Information                             |             |                                |  |  |  |
| Analyst  | SEB                        |              | Highway/Direction of Travel                  | Southbou    | ınd I-87                       |  |  |  |
| Agency or Company                                | CHA                        |              | From/To                                      | Exit 5 to I |                                |  |  |  |
| Date Performed                                   | 6/22/2011                  |              | Jurisdiction                                 | NYSDOT      |                                |  |  |  |
| Analysis Time Period                             | PM                         |              | Analysis Year                                | 2026 No-    | Build                          |  |  |  |
| Project Description Exit 4                       |                            |              |  |             |                                |  |  |  |
| ✓ Oper.(LOS)                                     |                            |              | Des.(N)                                      | □ Plar      | nning Data                     |  |  |  |
| Flow Inputs                                      |                            |              |  |             |                                |  |  |  |
| Volume, V  | 2600                       | veh/h        | Peak-Hour Factor, PHF                        | 0.92        |                                |  |  |  |
| AADT   |                            | veh/day      | %Trucks and Buses, P <sub>T</sub>            | 2           |                                |  |  |  |
| Peak-Hr Prop. of AADT, K                         |                            |              | %RVs, P <sub>R</sub>                         | 0           |                                |  |  |  |
| Peak-Hr Direction Prop, D                        |                            |              | General Terrain:                             | Level       |                                |  |  |  |
| DDHV = AADT x K x D                              | 1.00                       | veh/h        | Grade % Length<br>Up/Down %                  | mi          |                                |  |  |  |
| Driver type adjustment<br>Calculate Flow Adjustr |                            |              | Op/Down %                                    |             |                                |  |  |  |
|  | 1.00                       |              |  | 1.2         |                                |  |  |  |
| f <sub>p</sub>                                   |                            |              | E <sub>R</sub>                               |             |                                |  |  |  |
| E <sub>T</sub>                                   | 1.5                        |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990       |                                |  |  |  |
| Speed Inputs                                     |                            |              | Calc Speed Adj and FF                        | <u>S</u>    |                                |  |  |  |
| _ane Width                                       | 12.0                       | ft           | $f_LW$                                       |             | mi/h                           |  |  |  |
| Rt-Shoulder Lat. Clearance                       | 6.0                        | ft           | f <sub>LC</sub>                              |             | mi/h                           |  |  |  |
| Interchange Density                              | 0.50                       | I/mi         | <b>I</b> .                                   |             | mi/h                           |  |  |  |
| Number of Lanes, N                               | 3                          |              | f <sub>ID</sub>                              |             |                                |  |  |  |
| FFS (measured)                                   | 56.0                       | mi/h         | f <sub>N</sub>                               |             | mi/h                           |  |  |  |
| Base free-flow Speed, BFFS                       |                            | mi/h         | FFS  | 56.0        | mi/h                           |  |  |  |
| LOS and Performance                              | Measures                   |              | Design (N)                                   |             |                                |  |  |  |
|  |                            |              | Design (N)                                   |             |                                |  |  |  |
| Operational (LOS)                                |                            |              | Design LOS                                   |             |                                |  |  |  |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$          | x f <sub>HV</sub> x<br>951 | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF \times N)$ | v f v       |                                |  |  |  |
| · <sub>p</sub> )                                 | 931                        | рсліліп      | P  | ' 'HV ^     | pc/h                           |  |  |  |
| 5  | 56.0                       | mi/h         | f <sub>p</sub> )                             |             |                                |  |  |  |
| $D = v_p / S$                                    | 17.0                       | pc/mi/ln     | S  |             | mi/h                           |  |  |  |
| LOS  | В                          | <b>P</b> 3   | $D = v_p / S$                                |             | pc/mi/ln                       |  |  |  |
|  | 2                          |              | Required Number of Lanes, N                  | 1           |                                |  |  |  |
| Glossary   |                            |              | Factor Location                              |             |                                |  |  |  |
| N - Number of lanes                              | S - Speed                  |              | F.,Libit-00, 0, 00, 40                       |             | f                              |  |  |  |
| V - Hourly volume                                | D - Density                |              | E <sub>R</sub> - Exhibits23-8, 23-10         |             | f <sub>LW</sub> - Exhibit 23-4 |  |  |  |
| v <sub>p</sub> - Flow rate                       | FFS - Free-flow            | v speed      | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-   | 11          | f <sub>LC</sub> - Exhibit 23-5 |  |  |  |
| LOS - Level of service                           | BFFS - Base fr             |              | f <sub>p</sub> - Page 23-12                  |             | f <sub>N</sub> - Exhibit 23-6  |  |  |  |
|  |                            | oo now speed | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | -2, 23-3    | f <sub>ID</sub> - Exhibit 23-7 |  |  |  |
| DDHV - Directional design ho                     | our volume                 |              | <u>'</u>                                     |             |                                |  |  |  |

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## **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mith) Free-Flow Spred FFS = <u>75 midt</u> 70 miih 70 65 midt 60 mish 60 55 min 50 30 200 400 1200 1600 2000 2400 Flow Rate (pc/h/lin)

| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> , S, D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>o</sub> , S, D |

| General Information                              |                             |              | Site Information  |           |                                |  |  |  |  |
|--|-----------------------------|--------------|---|-----------|--------------------------------|--|--|--|--|
| Analyst  | SEB                         |              | Highway/Direction of Travel   | Northbo   | und I-87                       |  |  |  |  |
| Agency or Company                                | CHA                         |              | From/To   | Exit 5 to | Exit 6                         |  |  |  |  |
| Date Performed                                   | 6/22/2011                   |              | Jurisdiction  | NYSDO     |                                |  |  |  |  |
| Analysis Time Period                             | PM                          |              | Analysis Year   | 2026 No   | -Build                         |  |  |  |  |
| Project Description Exit 4                       |                             |              | THE REPORT OF THE PARTY OF THE |           |                                |  |  |  |  |
| ✓ Oper.(LOS)                                     |                             |              | Des.(N)   | □ Pla     | nning Data                     |  |  |  |  |
| Flow Inputs                                      |                             |              |   |           |                                |  |  |  |  |
| Volume, V  | 6150                        | veh/h        | Peak-Hour Factor, PHF   | 0.86      |                                |  |  |  |  |
| AADT   |                             | veh/day      | %Trucks and Buses, $P_T$  | 2         |                                |  |  |  |  |
| Peak-Hr Prop. of AADT, K                         |                             |              | %RVs, P <sub>R</sub>  | 0         |                                |  |  |  |  |
| Peak-Hr Direction Prop, D                        |                             |              | General Terrain:  | Level     |                                |  |  |  |  |
| DDHV = AADT x K x D                              | 1.00                        | veh/h        | Grade % Length<br>Up/Down %   | mi        |                                |  |  |  |  |
| Driver type adjustment<br>Calculate Flow Adjustr |                             |              | Op/Down 76  |           |                                |  |  |  |  |
| ······································           | 1.00                        |              | E   | 1.2       |                                |  |  |  |  |
| f <sub>p</sub>                                   |                             |              | E <sub>R</sub>  |           |                                |  |  |  |  |
| E <sub>T</sub>                                   | 1.5                         |              | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$  | 0.990     |                                |  |  |  |  |
| Speed Inputs                                     |                             |              | Calc Speed Adj and FF   | <u>s</u>  |                                |  |  |  |  |
| ane Width  | 12.0                        | ft           | $f_LW$  |           | mi/h                           |  |  |  |  |
| Rt-Shoulder Lat. Clearance                       | 6.0                         | ft           | f <sub>LC</sub>   |           | mi/h                           |  |  |  |  |
| nterchange Density                               | 0.50                        | I/mi         | I _   |           |                                |  |  |  |  |
| Number of Lanes, N                               | 4                           |              | f <sub>ID</sub>   |           | mi/h                           |  |  |  |  |
| FFS (measured)                                   | 56.0                        | mi/h         | f <sub>N</sub>  |           | mi/h                           |  |  |  |  |
| Base free-flow Speed, BFFS                       |                             | mi/h         | FFS   | 56.0      | mi/h                           |  |  |  |  |
| OS and Performance                               | Measures                    |              | Design (N)  |           |                                |  |  |  |  |
|  |                             |              | Design (N)  |           |                                |  |  |  |  |
| Operational (LOS)                                |                             |              | Design LOS  |           |                                |  |  |  |  |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$          | x f <sub>HV</sub> x<br>1806 | pc/h/ln      | $v_p = (V \text{ or DDHV}) / (PHF \times N)$  | rf v      |                                |  |  |  |  |
| ;<br>p)  | 7000                        | рс/п/п       | l r   | 'HV ^     | pc/h                           |  |  |  |  |
| S  | 56.0                        | mi/h         | $f_p$ )   |           |                                |  |  |  |  |
| $D = v_p / S$                                    | 32.3                        | pc/mi/ln     | S   |           | mi/h                           |  |  |  |  |
| LOS  | D                           | 1            | $D = v_p / S$   |           | pc/mi/ln                       |  |  |  |  |
|  | <del>-</del>                |              | Required Number of Lanes, N   | l         |                                |  |  |  |  |
| Glossary   |                             |              | Factor Location   |           |                                |  |  |  |  |
| N - Number of lanes                              | S - Speed                   |              | E Evhibite 22 9 22 10   |           | f Eyhihit 22 4                 |  |  |  |  |
| √ - Hourly volume                                | D - Density                 |              | E <sub>R</sub> - Exhibits 23-8, 23-10   |           | f <sub>LW</sub> - Exhibit 23-4 |  |  |  |  |
| , - Flow rate                                    | FFS - Free-flow             | / speed      | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-  | 11        | f <sub>LC</sub> - Exhibit 23-5 |  |  |  |  |
| OS - Level of service                            | BFFS - Base fr              |              | f <sub>p</sub> - Page 23-12   |           | f <sub>N</sub> - Exhibit 23-6  |  |  |  |  |
| DDHV - Directional design ho                     |                             | oo non opood | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-  | 2, 23-3   | f <sub>ID</sub> - Exhibit 23-7 |  |  |  |  |
| יוטכ - טוופטוטום design nc                       | ou voluine                  |              | <u> </u>  |           |                                |  |  |  |  |

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# **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mi/h) Free-Flow Spred FFS = 75 min 70 mish 70 65 midt 60 mish 60 55 miih 50 30 400 800 1200 2000 2400 1600 Flow Rate (pc/h/lin)

| Application                | Input                    | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, D             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | v <sub>p</sub> . S. D |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, D             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>p</sub> ) | FFS, LOS, N              | v <sub>p</sub> , S, D |

| General Information                           |                          |               | Site Information                             |  |                                 |  |  |  |
|---|--------------------------|---------------|--|--|---------------------------------|--|--|--|
| Analyst                                       | SEB                      |               | Highway/Direction of Travel                  | Southbo                                | und I-87                        |  |  |  |
| Agency or Company                             | CHA                      |               | From/To                                      | Exit 6 to                              | Exit 5                          |  |  |  |
| Date Performed                                | 6/22/2011                |               | Jurisdiction                                 | NYSDO                                  |                                 |  |  |  |
| Analysis Time Period                          | PM                       |               | Analysis Year                                | 2026 No                                | -Build                          |  |  |  |
| Project Description Exit 4                    |                          |               |  |  |                                 |  |  |  |
| Oper.(LOS)                                    |                          | <b>.</b>      | Des.(N)                                      | □ Pla                                  | nning Data                      |  |  |  |
| Flow Inputs                                   |                          |               |  |  |                                 |  |  |  |
| Volume, V                                     | 3650                     | veh/h         | Peak-Hour Factor, PHF                        | 0.92                                   |                                 |  |  |  |
| AADT  |                          | veh/day       | %Trucks and Buses, P <sub>T</sub>            | 2                                      |                                 |  |  |  |
| Peak-Hr Prop. of AADT, K                      |                          |               | %RVs, P <sub>R</sub>                         | 0                                      |                                 |  |  |  |
| Peak-Hr Direction Prop, D                     |                          |               | General Terrain:                             | Level                                  |                                 |  |  |  |
| DDHV = AADT x K x D                           | 1.00                     | veh/h         | Grade % Length                               | mi                                     |                                 |  |  |  |
| Driver type adjustment Calculate Flow Adjusti |                          |               | Up/Down %                                    |  |                                 |  |  |  |
|   | 1.00                     |               | E <sub>R</sub>                               | 1.2                                    |                                 |  |  |  |
| f <sub>p</sub>                                |                          |               |  |  |                                 |  |  |  |
| E <sub>T</sub>                                | 1.5                      |               | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ | 0.990                                  |                                 |  |  |  |
| Speed Inputs                                  |                          |               | Calc Speed Adj and FF                        | <u>s</u>                               |                                 |  |  |  |
| Lane Width                                    | 12.0                     | ft            | $f_{LW}$                                     |  | mi/h                            |  |  |  |
| Rt-Shoulder Lat. Clearance                    | 6.0                      | ft            | f <sub>LC</sub>                              |  | mi/h                            |  |  |  |
| Interchange Density                           | 0.50                     | I/mi          |  |  | mi/h                            |  |  |  |
| Number of Lanes, N                            | 4                        |               | f <sub>ID</sub>                              |  |                                 |  |  |  |
| FFS (measured)                                | 56.0                     | mi/h          | f <sub>N</sub>                               |  | mi/h                            |  |  |  |
| Base free-flow Speed, BFFS                    |                          | mi/h          | FFS  | 56.0                                   | mi/h                            |  |  |  |
| LOS and Performance                           | Measures                 |               | Design (N)                                   |  |                                 |  |  |  |
|   |                          |               | Design (N)                                   |  |                                 |  |  |  |
| Operational (LOS)                             | _                        |               | Design LOS                                   |  |                                 |  |  |  |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$       | x f <sub>HV</sub> x 1002 | pc/h/ln       | $v_p = (V \text{ or DDHV}) / (PHF \times N)$ | cfx                                    |                                 |  |  |  |
| $f_p$ )                                       | ,                        | ролин         | 1 -  | HV                                     | pc/h                            |  |  |  |
| S   | 56.0                     | mi/h          | f <sub>p</sub> )                             |  |                                 |  |  |  |
| $D = v_p / S$                                 | 17.9                     | pc/mi/ln      | S  |  | mi/h                            |  |  |  |
| LOS   | В                        |               | $D = v_p / S$                                |  | pc/mi/ln                        |  |  |  |
|   |                          |               | Required Number of Lanes, N                  | l                                      |                                 |  |  |  |
| Glossary                                      | ×                        |               | Factor Location                              |  |                                 |  |  |  |
| N - Number of lanes                           | S - Speed                |               | E <sub>R</sub> - Exhibits23-8, 23-10         |  | f <sub>I W</sub> - Exhibit 23-4 |  |  |  |
| V - Hourly volume                             | D - Density              |               | ' '  | 11                                     |                                 |  |  |  |
| v <sub>p</sub> - Flow rate                    | FFS - Free-flov          | v speed       | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-   | 1 1                                    | f <sub>LC</sub> - Exhibit 23-5  |  |  |  |
| LOS - Level of service                        | BFFS - Base fr           | ee-flow speed | f <sub>p</sub> - Page 23-12                  | 0.00.0                                 | f <sub>N</sub> - Exhibit 23-6   |  |  |  |
| DDHV - Directional design ho                  | our volume               |               | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-   | -2, 23-3                               | f <sub>ID</sub> - Exhibit 23-7  |  |  |  |
|   |                          |               |  | ······································ |                                 |  |  |  |

|  | RAI  | MPS AND                       | RAMP JUNG         | CTIONS W   | ORKSHE  | ET                           |                          |                                |                                      |  |  |
|--|--|-------------------------------|-------------------|--|---|------------------------------|--------------------------|--------------------------------|--------------------------------------|--|--|
| General Infor  |  |                               |                   | Site Infor   |   | = =                          |                          |                                |                                      |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioc | SEB<br>CHA<br>9/08/  | 2011                          | Fre<br>Jui<br>Jui | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | Travel Northbound I-87 Exit 2W On-Ramp NYSDOT 2026 No-Build |                              |                          |                                |                                      |  |  |
|  | Exit 4   |                               |                   |  |   |                              |                          |                                |                                      |  |  |
| Inputs   |  | <del></del>                   |                   |  |   |                              |                          |                                |                                      |  |  |
| Upstream Adj Ramp  |  | Terrain: Level                |                   |  |   |                              |                          | Downstre                       | eam Adj                              |  |  |
| ✓ Yes ☐ Or   | )  |                               |                   |  |   |                              |                          | Ramp<br>Yes                    | □ On                                 |  |  |
| □ No     Of  | f  |                               |                   |  |   |                              |                          | ✓ No                           | ☐ Off                                |  |  |
| _ <sub>up</sub> = 1100   | ft   |                               |                   |  |   |                              |                          | L <sub>down</sub> =            | ft                                   |  |  |
|  | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$<br>$S_{FR} = 40.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$ |                               |                   |  |   |                              |                          | V <sub>D</sub> =               | veh/h                                |  |  |
| Conversion to  | o pc/h Und   | der Base C                    |                   |  |   |                              |                          |                                |                                      |  |  |
| (pc/h)   | V<br>(Veh/hr)  | PHF                           | Terrain           | %Truck   | %Rv   | f <sub>HV</sub>              | fp                       | v = V/PH                       | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway  | 4400   | 0.86                          | Level             | 2  | 0   | 0.990                        | 1.00                     |                                | 5167                                 |  |  |
| Ramp   | 730  | 0.92                          | Level             | 2  | 0   | 0.990                        | 1.00                     |                                | 801                                  |  |  |
| UpStream   | 880  | 0.92                          | Level             | 2  | 0   | 0.990                        | 1.00                     |                                | 966                                  |  |  |
| DownStream   | <u> </u>   | Marga Arasa                   |                   |  |   | <u> </u>                     | Divorgo Aro              |                                |                                      |  |  |
| Estimation of  |  | Merge Areas                   |                   |  | Fstimati  | ion of v <sub>12</sub>       | Diverge Are              | as                             |                                      |  |  |
|  |  | <u> </u>                      |                   |  | LStillati   | 011 01 1 12                  |                          |                                |                                      |  |  |
|  | $V_{12} = V_F$   |                               |                   |  |   | V <sub>12</sub>              | $= V_R + (V_F -$         | $V_R)P_{FD}$                   |                                      |  |  |
| - <sub>EQ</sub> =  |  | (Equation 2                   |                   |  | L <sub>EQ</sub> =   |                              | (Equation                | 25-8 or 25-                    | 9)                                   |  |  |
| P <sub>FM</sub> =  |  |                               | on (Exhibit 25-5) |  | P <sub>FD</sub> =   |                              | using Equ                | ation (Exhibit                 | 25-12)                               |  |  |
| I <sub>12</sub> =  | 3027   |                               |                   |  | V <sub>12</sub> =   |                              | pc/h                     |                                |                                      |  |  |
| $V_3$ or $V_{av34}$  | 2140 <sub> </sub><br>5)  | oc/h (Equatio                 | n 25-4 or 25-     |  | $V_3$ or $V_{av34}$   |                              | pc/h (Equati             | pc/h (Equation 25-15 or 25-16) |                                      |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,70                          |  | s 🗹 No                        |                   |  | Is V <sub>3</sub> or V <sub>av3</sub>                       | $_{34} > 2,700 \text{ pc/h}$ | ? ☐ Yes ☐                | No                             |                                      |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                           |  |                               |                   |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No              |                              |                          |                                |                                      |  |  |
| f Yes,V <sub>12a</sub> =   |  | (Equation 25                  | -8)               |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)             |                              |                          |                                |                                      |  |  |
| Capacity Che   |  |                               |                   |  | Capacity  | y Checks                     |                          |                                |                                      |  |  |
| , ,  | Actual   | Ca                            | pacity            | LOS F?   | <u> </u>  | Actu                         | ıal                      | Capacity                       | LOS F                                |  |  |
|  |  |                               |                   |  | V <sub>F</sub>  |                              | Exhibit :                | 25-14                          |                                      |  |  |
| $V_{FO}$   | 5968   | Exhibit 25-7                  |                   | No   | $V_{FO} = V_{F}$  | - V <sub>R</sub>             | Exhibit :                | 25-14                          |                                      |  |  |
| . 0  |  |                               |                   |  | V <sub>R</sub>  |                              | Exhibit                  | 25-3                           |                                      |  |  |
| Flow Entering  | n Merae In   | fluence A                     | rea               | <u>.                                    </u>           |   | terina Di                    | verge Influ              |                                | <br>Pa                               |  |  |
| .o. znenn  | Actual   | î .                           | Desirable         | Violation?   |   | Actual                       |                          | esirable                       | Violation                            |  |  |
| V <sub>R12</sub>   | 3828   | Exhibit 25-7                  | 4600:All          | No   | V <sub>12</sub>   | 1                            | Exhibit 25-1             |                                |                                      |  |  |
| Level of Serv  | ice Detern   | nination (i                   | f not F)          |  |   | Service                      | Determina                | tion (if n                     | ot F)                                |  |  |
|  |  | 0.0078 V <sub>12</sub> - 0.00 |                   |  | <del></del>   |                              | + 0.0086 V <sub>12</sub> | •                              |                                      |  |  |
| O <sub>R</sub> = 29.6 (pc  |  |                               |                   |  |   | c/mi/ln)                     | 12                       | 5                              |                                      |  |  |
| OS = D (Exhib  |  |                               |                   |  |   | xhibit 25-4)                 |                          |                                |                                      |  |  |
| Speed Detern   |  |                               |                   |  |   | Petermina                    | tion                     |                                |                                      |  |  |
| M <sub>S</sub> = 0.432 (Exi  |  |                               |                   |  | <del></del>   | xhibit 25-19)                |                          |                                |                                      |  |  |
| -  | (Exhibit 25-19)  |                               |                   |  | ,   | oh (Exhibit 25-              | 19)                      |                                |                                      |  |  |
|  | (Exhibit 25-19)  |                               |                   |  |   | oh (Exhibit 25-              |                          |                                |                                      |  |  |
|  | (Exhibit 25-19)  |                               |                   |  | 1   | oh (Exhibit 25-              |                          |                                |                                      |  |  |
| S = 50.0  mph  |  |                               |                   |  | IS = mi   | ON (Exhibit 75-              | 151                      |                                |                                      |  |  |

|  |                                  | KAIVIF                 | S AND RAM   |   |  | INNO           | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |  |                                    |             |  |
|--|----------------------------------|------------------------|---|---|--|----------------|--|--|------------------------------------|-------------|--|
| General Info   | rmation                          |                        |   | Site Infor  |  |                |  |  |                                    |             |  |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Perio | 9/08/                            |                        | J   | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year |  | Exit 4<br>NYSD | ound I-87<br>NB Off<br>OT<br>Io-Build  |  |                                    |             |  |
| Project Description  | Exit 4                           |                        |   |   |  |                |  |  |                                    |             |  |
| Inputs   |                                  |                        |   |   |  |                |  |  |                                    |             |  |
| Upstream Adj Ram   |                                  | Terrain: Leve          |   |   |  |                |  |  | Downstrea<br>Ramp                  | m Adj       |  |
| ☐ Yes ☐ C  |                                  |                        |   |   |  |                |  |  | ✓ Yes                              | ✓ On        |  |
| ✓ No   | tt .                             |                        |   |   |  |                |  |  | □ No                               | ☐ Off       |  |
| L <sub>up</sub> = ft   |                                  | S                      | $S_{EE} = 56.0 \text{ mph}$ $S_{ED} = 40.0 \text{ mph}$ |   |  |                |  |  |                                    | 2660 ft     |  |
| V <sub>u</sub> = veh/  |                                  |                        | Sketch (  | show lanes, L <sub>A</sub>                                  |  |                |  |  | V <sub>D</sub> =                   | 1470 veh/   |  |
| Conversion   |                                  | der Base (             | Conditions  |   | 1  |                |  |  |                                    |             |  |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                    | Terrain   | %Truck  | %Rv  | ╙              | f <sub>HV</sub>                        | f <sub>p</sub>                         | x f <sub>HV</sub> x f <sub>p</sub> |             |  |
| Freeway  | 5150                             | 0.86                   | Level   | 2   | 0  | 0.990 1.00     |  |  | 604                                |             |  |
| Ramp   | 630                              | 0.86                   | Level   | 2   | 0  | 0.990 1.00     |  | 1.00                                   | 740                                |             |  |
| UpStream<br>DownStream   | 1470                             | 0.88                   | Level   | 1   | 0  | _              | .995                                   | 1.00                                   | 167                                | 70          |  |
| Downstream   |                                  | Merge Areas            | FEAGI   | , '   | <del>                                     </del> |                |  | Diverge Areas                          | 107                                | 17          |  |
| Estimation of  |                                  |                        | Estimati  | ion d   |  | g              |  |  |                                    |             |  |
|  | V <sub>12</sub> = V <sub>F</sub> | (P )                   |   |   | <del>                                     </del> |                |  | = V <sub>R</sub> + (V <sub>F</sub> - V | \P                                 |             |  |
| <br>  =  |                                  | ation 25-2 or          | 25-3)   |   | _  |                |  | Equation 25-8                          |                                    |             |  |
| L <sub>EQ</sub> =<br>P <sub>FM</sub> =                               |                                  | Equation (E            |   |   | L <sub>EQ</sub> =<br>P <sub>FD</sub> =           |                |  | .575 using Ed                          |                                    | ihit 25 12) |  |
| ' FM<br>V <sub>12</sub> =  | pc/h                             | Equation (E            | Allibit 25-5)   |   | V <sub>12</sub> =                                |                |  | 791 pc/h                               | juation (Exil                      | IDIL 23-12) |  |
| V <sub>3</sub> or V <sub>av34</sub>                                  | •                                | (Equation 25           | -4 or 25-5)   |   | V <sub>3</sub> or V <sub>av34</sub>              |                |  | 771  pc/11<br>257  pc/h (Equ           | ation 25-15                        | or 25-16    |  |
| Is $V_3$ or $V_{av34} > 2.7$   |                                  |                        | 4 01 20 0)  |   |  | >2             |  | Yes Mo                                 | allon 25-15                        | 01 23-10    |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                         |                                  |                        |   |   |  |                |  | Yes ✓ No                               |                                    |             |  |
| If Yes, V <sub>12a</sub> =   | · <del>=</del>                   | (Equation 25           | -8)   |   | If Yes, $V_{12a}$ = pc/h (Equation 25-18)        |                |  |  |                                    |             |  |
| Capacity Ch  |                                  | (Equation 20           | - 0)  |   | Capacit  |                |  | John (Equation                         | 120 10)                            |             |  |
| Capacity Cit   | Actual                           |                        | apacity   | LOS F?  | Capach   | y Cil          | Actual                                 | Ca                                     | pacity                             | LOS F?      |  |
|  | notaai                           | <del>l ĭ</del>         | ариону  | 1 2001.   | V <sub>F</sub>                                   |                | 6048                                   | Exhibit 25-1                           | · ·                                | No          |  |
| V <sub>FO</sub>  |                                  | Exhibit 25-7           |   |   | $V_{FO} = V_{F}$                                 | - V_           | 5308                                   | Exhibit 25-1                           |                                    | No          |  |
| * FO   |                                  | LAHIDIT 25-7           |   |   | V <sub>R</sub>                                   | *R             | 740                                    | Exhibit 25-1                           | <del>-</del>                       | _           |  |
| <u> </u>   | <u> </u>                         | <u> </u>               |   |   | <u> </u>   |                |  |  |                                    | No          |  |
| Flow Enterin   | Actual                           | 1                      | <b>rea</b><br>Desirable                                 | Violation?  | riow En  | - 1            | <i>ng Dive</i><br>Actual               | rge Influen  Max Desiral               |                                    | Violation   |  |
| V <sub>R12</sub>   | netuai                           | Exhibit 25-7           | Desirable   | violation?  | V <sub>12</sub>                                  |                | 3791                                   | Exhibit 25-14                          | 4400:All                           | No          |  |
| Level of Ser   | vice Deter                       |                        | f not F)  |   |  |                |  | eterminatio                            |                                    |             |  |
| $D_{R} = 5.475 + 0$  |                                  | •                      |   |   | 1  |                |  | 0.0086 V <sub>12</sub> - 0.            | _                                  | /           |  |
| $D_R = 3.473 + C$ $D_R = (pc/m)$                                     |                                  | 0.0070 v <sub>12</sub> | 0.00021 L <sub>A</sub>                                  |   |  |                | +.232 + 0<br>:/mi/ln)                  | 12 - U.                                | -D                                 |             |  |
| 1.5  | oit 25-4)                        |                        |   |   |  |                | bit 25-4)                              |  |                                    |             |  |
| Speed Deter  |                                  |                        |   |   | Speed D  | •              |  | <u></u>                                |                                    |             |  |
|  |                                  |                        |   |   | <del></del>                                      |                | xhibit 25                              |  |                                    |             |  |
| M <sub>S</sub> = (Exibit 2   |                                  |                        |   |   |  | •              | :xriibit 25<br>n (Exhibit              | *                                      |                                    |             |  |
|  | hibit 25-19)                     |                        |   |   |  | -              |  |  |                                    |             |  |
|  | hibit 25-19)<br>hibit 25-14)     |                        |   |   | 1.   |                | n (Exhibit<br>n (Exhibit               |  |                                    |             |  |
| S = mph (Ex  |                                  |                        |   |   |  |                |  |  |                                    |             |  |

|  |                           | <u> RAI</u>                        | MPS AND                      | RAMP JUNG                | <u> FIIONS W</u>                                       | ORKSHE  | ET               |                          |                                      |                     |                                      |  |
|--|---------------------------|------------------------------------|------------------------------|--------------------------|--|---|------------------|--------------------------|--------------------------------------|---------------------|--------------------------------------|--|
| General  | Inform                    | ation                              |                              |                          | Site Infor   | mation  |                  |                          |                                      |                     |                                      |  |
| Analyst<br>Agency or Co<br>Date Perform<br>Analysis Time | ompany<br>ned<br>e Period | SEB<br>CHA<br>9/08/2<br>PM         | 2011                         | Fre<br>Jui<br>Jui        | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | Exit 4 NB On-Ramp<br>NYSDOT                                     |                  |                          |                                      |                     |                                      |  |
| Project Descr  | ription E                 | xit 4                              |                              |                          |  |   |                  |                          |                                      |                     |                                      |  |
| Inputs   |                           |                                    | l <del>.</del>               |                          |  |   |                  |                          |                                      |                     |                                      |  |
| Jpstream Ad  |                           |                                    | Terrain: Level               |                          |  |   |                  |                          |                                      | Downstre<br>Ramp    | eam Adj                              |  |
| Yes  | □ On □ Off                |                                    |                              |                          |  |   |                  |                          |                                      | ✓ Yes               | □ On                                 |  |
| ™ No   | III OTT                   |                                    |                              |                          |  |   |                  |                          |                                      | □ No                | ✓ Off                                |  |
| up =   | ft                        |                                    | s                            | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4   | 0.0 mph          | 1                        |                                      | L <sub>down</sub> = | 3500 ft                              |  |
| / <sub>u</sub> =   | veh/h                     |                                    |                              | • •                      | show lanes, L <sub>A</sub> ,                           |   | o.op             |                          |                                      | V <sub>D</sub> =    | 450 <b>veh/h</b>                     |  |
| Convers  | ion to                    | pc/h Und                           | ler Base C                   | Conditions               |  |   |                  |                          |                                      |                     |                                      |  |
| (pc/h)   | )                         | V<br>(Veh/hr)                      | PHF                          | Terrain                  | %Truck   | %Rv   | f <sub>H</sub>   | HV                       | f <sub>p</sub>                       | v = V/PH            | F x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  |                           | 4500                               | 0.86                         | Level                    | 2  | 0   | 0.99             | 90                       | 1.00                                 |                     | 5285                                 |  |
| Ramp   |                           | 1470                               | 0.88                         | Level                    | 1  | 0   | 0.99             | 95                       | 1.00                                 | ļ                   | 1679                                 |  |
| UpStream<br>DownStream                                   | +                         | 4EO                                | 0.92                         | Lovel                    | 2  | 0   | 0.00             | 05                       | 1.00                                 | -                   | 106                                  |  |
| Downstean  |                           | 450                                | Verge Areas                  | Level                    | 3  | 0   | 0.98             |                          | Diverge Areas                        | <u> </u>            | 496                                  |  |
| Estimati   |                           | Estimati                           | on of                        | f V <sub>42</sub>        | biverge Area.  | ,   |                  |                          |                                      |                     |                                      |  |
|  |                           | V <sub>12</sub> = V <sub>F</sub> ( | (P )                         |                          |  | 1   |                  | <del></del>              |                                      |                     |                                      |  |
| _  |                           |                                    |                              | 25-2 or 25-3)            |  |   |                  |                          | V <sub>R</sub> + (V <sub>F</sub> - V |                     |                                      |  |
| -EQ =  |                           |                                    |                              |                          |  | L <sub>EQ</sub> =   |                  |                          | (Equation 2                          |                     |                                      |  |
| <sub>FM</sub> =  |                           |                                    |                              | on (Exhibit 25-5)        |  | P <sub>FD</sub> =   |                  |                          | using Equa                           | tion (Exhibit       | 25-12)                               |  |
| / <sub>12</sub> =  |                           | 3185 p                             |                              | - 05 4 05                |  | V <sub>12</sub> =   |                  |                          | pc/h                                 |                     |                                      |  |
| $V_3$ or $V_{av34}$                                      |                           | 2100 p<br>5)                       | oc/n (Equation               | n 25-4 or 25-            |  | $V_3$ or $V_{av34}$   |                  |                          | pc/h (Equation                       | n 25-15 or 2        | 5-16)                                |  |
| Is V <sub>3</sub> or V <sub>av3</sub>                    | , > 2,700                 | pc/h? TYes                         | s 🗹 No                       |                          |  | Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |                  |                          |                                      |                     |                                      |  |
|  |                           | 7 <sub>12</sub> /2                 |                              |                          |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                  |                  |                          |                                      |                     |                                      |  |
| f Yes,V <sub>12a</sub> =                                 | 4                         |                                    | Equation 25                  | -8)                      |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)                 |                  |                          |                                      |                     |                                      |  |
| Capacity   | / Chec                    |                                    |                              | -,                       |  | Capacity  | / Che            | cks                      |                                      |                     |                                      |  |
|  |                           | Actual                             | Ca                           | pacity                   | LOS F?   |   |                  | Actual                   |                                      | Capacity            | LOS F                                |  |
|  |                           |                                    |                              | •                        |  | V <sub>F</sub>  |                  |                          | Exhibit 25                           | 5-14                |                                      |  |
| $V_{FO}$   |                           | 6964                               | Exhibit 25-7                 |                          | Yes  | $V_{FO} = V_{F}$  | - V <sub>D</sub> |                          | Exhibit 25                           | 5-14                |                                      |  |
| FU   |                           | 0,01                               |                              |                          |  | V <sub>R</sub>  | R                |                          | Exhibit 2                            | _                   | _                                    |  |
| Flow En  | torina                    | Morgo In                           | l l<br>fluence A             | ro2                      | <u> </u>   | •   | torine           | rge Influe               |                                      | <u> </u>            |                                      |  |
| IOW LIII   | tering                    | Actual                             |                              | Desirable                | Violation?   | I IOW LII   |                  | tual                     | Max De:                              |                     | Violation?                           |  |
| V <sub>R12</sub>   |                           | 4864                               | Exhibit 25-7                 | 4600:All                 | Yes  | V <sub>12</sub>   | 1                |                          | Exhibit 25-14                        | 1                   | 7 Iolation:                          |  |
| evel of  | Servic                    |                                    | nination (i                  |                          |  |   | Serv             | ice De                   | eterminat                            | ion (if n           | ot F                                 |  |
|  |                           |                                    | 0.0078 V <sub>12</sub> - 0.0 |                          |  |   |                  |                          | .0086 V <sub>12</sub> -              |                     | /                                    |  |
|  | 37.0 (pc/m                |                                    | - 12                         | А                        |  |   | c/mi/ln          |                          | 112                                  | -12-00 <u>-</u> 13  |                                      |  |
| IX.  | F (Exhibit                |                                    |                              |                          |  |   | xhibit 2         | •                        |                                      |                     |                                      |  |
| Speed D  |                           |                                    |                              |                          |  | Speed D   |                  |                          | on                                   |                     |                                      |  |
| •  |                           |                                    |                              |                          |  | <del> </del>  | xhibit 25        |                          |                                      |                     |                                      |  |
| 3  | /54 (Exibit               | •                                  |                              |                          |  |   |                  | bit 25-19)               |                                      |                     |                                      |  |
| ••   |                           | khibit 25-19)                      |                              |                          |  |   |                  | bit 25-19)               |                                      |                     |                                      |  |
| U  |                           | khibit 25-19)<br>khibit 25-14)     |                              |                          |  | I "   | -                | bit 25-19)<br>bit 25-15) |                                      |                     |                                      |  |
| S = 46.  |                           |                                    |                              |                          |  |   |                  |                          |                                      |                     |                                      |  |

|  |                           | KAIVIFS                  | AND RAM                  |   |  | KNS                                    | пььі            |   |                     |                                    |  |
|--|---------------------------|--------------------------|--------------------------|---|--|--|-----------------|---|---------------------|------------------------------------|--|
| General Infor  | mation                    |                          |                          | Site Infor  |  |  |                 |   |                     |                                    |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | SEB<br>CHA<br>9/08/<br>PM |                          | Ju<br>Ju                 | eeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year |  | Northbo<br>Exit 5 N<br>NYSDO<br>2026 N | T               |   |                     |                                    |  |
| Project Description  | Exit 4                    |                          |                          |   |  |  |                 |   |                     |                                    |  |
| Inputs   |                           | ,                        |                          |   |  |  |                 |   |                     |                                    |  |
| Upstream Adj Ramp  |                           | Terrain: Level           |                          |   |  |  |                 |   | Downstrea<br>Ramp   | m Adj                              |  |
| ✓ Yes ✓ On   |                           |                          |                          |   |  |  |                 |   | ☐ Yes               | □ On                               |  |
| I NO I OII   |                           |                          |                          |   |  |  |                 |   | ✓ No                | ☐ Off                              |  |
| L <sub>up</sub> = 3500 1   | t                         | S                        | <sub>-F</sub> = 56.0 mph |   | S <sub>FR</sub> = 3                              | 35.0 mp                                | h               |   | L <sub>down</sub> = | ft                                 |  |
| $V_{u} = 1470 \text{ v}$   |                           |                          | Sketch (                 | show lanes, L <sub>A</sub>                                |  |  |                 |   | V <sub>D</sub> =    | veh/h                              |  |
| Conversion to  |                           | der Base C               | onditions                | 1   |  |  |                 |   |                     |                                    |  |
| (pc/h)   | V<br>(Veh/hr)             | PHF                      | Terrain                  | %Truck  | %Rv  |  | f <sub>HV</sub> | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 5950                      | 0.86                     | Level                    | 2   |  | 0 0.990 1.00                           |                 |   | 698                 |                                    |  |
| Ramp   | 450                       | 0.92                     | Level                    | 3   | 0  | _                                      | 985             | 1.00  | 49                  |                                    |  |
| UpStream<br>DownStream   | 1470                      | 0.88                     | Level                    | 1   | 0  | 0.                                     | 995             | 1.00  | 167                 | /9                                 |  |
| Downstieam   |                           | Merge Areas              |                          |   | <del>                                     </del> |  |                 | Diverge Areas                                       |                     |                                    |  |
| Estimation of  |                           | morgo / ii ous           |                          |   | Estimat  | ion c                                  |                 | bivorgo / irous                                     |                     |                                    |  |
|  |                           | (D )                     |                          |   |  |  |                 | \/ . (\/ \/   | \D                  |                                    |  |
|  | $V_{12} = V_F$            |                          | 05.0)                    |   |  |  |                 | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> |                     | 05.0)                              |  |
| L <sub>EQ</sub> =  |                           | ation 25-2 or            |                          |   | L <sub>EQ</sub> =                                |  |                 | 653.39 (Equati                                      |                     |                                    |  |
| P <sub>FM</sub> =  | _                         | Equation (Ex             | (NIDIT 25-5)             |   | P <sub>FD</sub> =                                |  |                 | .734 using Eq                                       | uation (Exhi        | ibit 25-12)                        |  |
| V <sub>12</sub> =  | pc/h                      | /= <i>:</i> :            |                          |   | V <sub>12</sub> =                                |  |                 | 263 pc/h  |                     |                                    |  |
| V <sub>3</sub> or V <sub>av34</sub>                                    |                           | (Equation 25-            | 4 or 25-5)               |   | V <sub>3</sub> or V <sub>av34</sub>              | 0.7                                    |                 | 725 <b>pc/h (Equ</b>                                | ation 25-15         | or 25-16                           |  |
| Is $V_3$ or $V_{av34} > 2,70$  |                           |                          |                          |   |  |  |                 | Yes ✓ No  |                     |                                    |  |
| Is $V_3$ or $V_{av34} > 1.5$ *   | · <del>-</del>            |                          | ۵)                       |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No   |  |                 |   |                     |                                    |  |
| f Yes,V <sub>12a</sub> =   |                           | (Equation 25-            | 8)                       |   | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18) |  |                 |   |                     |                                    |  |
| Capacity Che   |                           |                          |                          | 1   | Capacity Checks                                  |  |                 |   |                     |                                    |  |
|  | Actual                    | Ca                       | pacity                   | LOS F?  | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \            | Actu                                   |                 |   | pacity              | LOS F                              |  |
|  |                           |                          |                          |   | V <sub>F</sub>                                   |  | 6988            | Exhibit 25-1  | 4 6780              | Yes                                |  |
| V <sub>FO</sub>  |                           | Exhibit 25-7             |                          |   | $V_{FO} = V_{F}$                                 | - V <sub>R</sub>                       | 6492            | Exhibit 25-1  | 4 6780              | No                                 |  |
|  |                           |                          |                          |   | V <sub>R</sub>                                   |  | 496             | Exhibit 25-3  | 2000                | No                                 |  |
| Flow Entering  | Merge In                  | fluence A                | rea                      |   | Flow Er  | nterin                                 | g Dive          | rge Influen   | ce Area             |                                    |  |
|  | Actual                    | Max D                    | esirable                 | Violation?  |  |  | Actual          | Max Desirab   | le                  | Violation                          |  |
| V <sub>R12</sub>   |                           | Exhibit 25-7             |                          |   | V <sub>12</sub>                                  | į                                      | 5263            | Exhibit 25-14                                       | 4400:All            | Yes                                |  |
| Level of Servi   | ice Detern                | nination (i              | not F)                   |   | Level o  | f Ser                                  | vice De         | eterminatio   | n (if not l         | <del>-</del> )                     |  |
| $D_R = 5.475 + 0.0$  | 00734 v <sub>R</sub> + 0  | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |   |  | $D_R = 4$                              | 1.252 + 0       | .0086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>  |                                    |  |
| O <sub>R</sub> = (pc/mi/l  | n)                        |                          |                          |   | $D_R = 4$  | 7.3 <b>(pc</b>                         | /mi/ln)         |   |                     |                                    |  |
| _OS = (Exhibit   | t 25-4)                   |                          |                          |   | LOS = F  | (Exhib                                 | oit 25-4)       |   |                     |                                    |  |
| Speed Detern   | nination                  |                          |                          |   | Speed I  | •                                      |                 | on  |                     |                                    |  |
| $M_S = $ (Exibit 25  |                           |                          |                          |   |  |  | xhibit 25       |   |                     |                                    |  |
| o .  |                           |                          | ,                        | (Exhibit  | •  |  |                 |   |                     |                                    |  |
| **   | ibit 25-19)               |                          |                          |   | 1 ''   | -                                      | (Exhibit        |   |                     |                                    |  |
| ~0 - mhn (⊏XII   |                           | 1.                       | -                        |   |  |  |                 |   |                     |                                    |  |
| S = mph (Exh   | IS = 5                    | 1 /1 mnh                 | ı (Exhibit               | 25-151  |  |  |                 |   |                     |                                    |  |

|  |                            | IVAINIL                    | S AND RAM                |  |   |                                      |                 |                             |                     |            |  |
|--|----------------------------|----------------------------|--------------------------|--|---|--------------------------------------|-----------------|-----------------------------|---------------------|------------|--|
| General In   | formation                  |                            |                          | Site Infor   | mation  |                                      |                 |                             |                     |            |  |
| Analyst<br>Agency or Com <sub>l</sub><br>Date Performed<br>Analysis Time P | 9/0                        | A<br>8/2011                | Jı<br>Jı                 | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | <u> </u>  | Southb<br>Exit 2V<br>NYSD(<br>2026 N | V Off           |                             |                     |            |  |
| Project Descript   | ion Exit 4                 |                            |                          |  |   |                                      |                 |                             |                     |            |  |
| Inputs   |                            |                            |                          |  |   |                                      |                 |                             |                     |            |  |
| Upstream Adj R   | •                          | Terrain: Leve              | l                        |  |   |                                      |                 |                             | Downstrea<br>Ramp   | m Adj      |  |
|  | On                         |                            |                          |  |   |                                      |                 |                             | ✓ Yes               | ✓ On       |  |
| ™ No □   | Off                        |                            |                          |  |   |                                      |                 |                             | □ No                | ☐ Off      |  |
| L <sub>up</sub> = f  | t                          |                            | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4                             | ΛΛ mr                                | h.              |                             | L <sub>down</sub> = | 1300 ft    |  |
|  | eh/h                       |                            | Sketch (                 | show lanes, L <sub>A</sub>                                 |   | 0.0 111                              | ) i i           |                             | V <sub>D</sub> =    | 850 veh/l  |  |
| Conversion   | n to pc/h Ur               | nder Base (                | Conditions               |  |   |                                      |                 |                             |                     |            |  |
| (pc/h)   | V<br>(Veh/hr)              | PHF                        | Terrain                  | %Truck   | %Rv   |                                      | f <sub>HV</sub> | $f_p$ $v = V/PHF$           |                     |            |  |
| Freeway  | 3950                       | 0.92                       | Level                    | 2  | 0   | 0.990 1.00                           |                 |                             | 433                 | 36         |  |
| Ramp   | 570                        | 0.92                       | Level                    | 2  | 0   | 0.990 1.00                           |                 | 1.00                        | 626                 |            |  |
| UpStream   | 050                        | 0.00                       | 11                       |  | _   | +                                    | 000             | 1.00                        | 022                 |            |  |
| DownStream   | 850                        | 0.92<br>Merge Areas        | Level                    | 2  | 0   | 0                                    | .990            | 1.00<br>Diverge Areas       | 93                  | 3          |  |
| Estimation   | 1 of v                     | Merge Areas                |                          | Estimati   | ion c   |                                      | Diverge Areas   |                             |                     |            |  |
|  |                            | / / D )                    |                          |  |   | -                                    |                 | V - (V - V                  | \D                  |            |  |
|  |                            | (P <sub>FM</sub> )         | 05.0)                    |  |   |                                      |                 | $= V_R + (V_F - V_F)$       |                     |            |  |
| L <sub>EQ</sub> =  |                            | uation 25-2 or             |                          |  | L <sub>EQ</sub> =                               |                                      |                 | Equation 25-8               |                     | =          |  |
| P <sub>FM</sub> =  |                            | g Equation (E              | EXNIBIT 25-5)            |  | P <sub>FD</sub> =                               |                                      |                 | .623 using Ed               | juation (Exhi       | bit 25-12) |  |
| V <sub>12</sub> =  | pc/h                       |                            | . 4 05 5)                |  | V <sub>12</sub> =                               |                                      |                 | 937 pc/h                    |                     |            |  |
| V <sub>3</sub> or V <sub>av34</sub>  |                            | n (Equation 25             | o-4 or 25-5)             |  | V <sub>3</sub> or V <sub>av34</sub>             | . 2 -                                |                 | 399 pc/h (Equ               | ation 25-15         | or 25-16   |  |
| 0 0.01   | 2,700 pc/h? ☐ Y            |                            |                          |  |   |                                      |                 | Yes ☑ No                    |                     |            |  |
|  | 1.5 * V <sub>12</sub> /2   |                            | . 0)                     |  |   |                                      |                 | Yes Mo                      | 05.40\              |            |  |
| If Yes,V <sub>12a</sub> =  |                            | n (Equation 25             | 9-8)                     |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |                                      |                 |                             |                     |            |  |
| Capacity (   |                            |                            |                          | 1 100 50   | Capacity  | y Ch                                 |                 |                             |                     | 1.00.5     |  |
|  | Actual                     |                            | apacity                  | LOS F?   | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \           |                                      | Actual          |                             | pacity              | LOS F      |  |
| .,   |                            |                            |                          |  | V <sub>F</sub>                                  |                                      | 4336            | Exhibit 25-1                | -                   | No         |  |
| $V_{FO}$   |                            | Exhibit 25-7               |                          |  | $V_{FO} = V_{F}$                                | - V <sub>R</sub>                     | 3710            | Exhibit 25-1                | <del>-</del>        | No         |  |
|  |                            |                            |                          |  | V <sub>R</sub>                                  |                                      | 626             | Exhibit 25-3                | 3 2100              | No         |  |
| Flow Ente  | ring Merge I               | nfluence A                 | rea                      |  | Flow En   | terir                                | ng Dive         | rge Influen                 | ce Area             |            |  |
|  | Actual                     | <del></del>                | Desirable                | Violation?   |   | _                                    | Actual          | Max Desiral                 |                     | Violation  |  |
| V <sub>R12</sub>   |                            | Exhibit 25-7               |                          |  | V <sub>12</sub>                                 |                                      | 2937            | Exhibit 25-14               | 4400:All            | No         |  |
|  | ervice Deter               |                            |                          |  |   |                                      |                 | terminatio                  |                     | =)         |  |
| $D_{R} = 5.475$  | + 0.00734 v <sub>R</sub> + | + 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |  |   | O <sub>R</sub> = 4                   | 4.252 + 0       | 0.0086 V <sub>12</sub> - 0. | 009 L <sub>D</sub>  |            |  |
| $D_R = (pc)$   | :/mi/ln)                   |                            |                          |  | D <sub>R</sub> = 26                             | .8 <b>(</b> pc                       | /mi/ln)         |                             |                     |            |  |
| LOS = (E)  | (hibit 25-4)               |                            |                          |  | LOS = C   | (Exhi                                | bit 25-4)       |                             |                     |            |  |
| Speed Det  | termination                |                            |                          |  | Speed D   | eter)                                | minati          | on                          |                     |            |  |
| M <sub>s</sub> = (Exit   | oit 25-19)                 |                            |                          |  | $D_{S} = 0.4$                                   | 419 (E                               | xhibit 25       | -19)                        |                     |            |  |
| Ŭ  | (Exhibit 25-19)            |                            |                          |  | S <sub>R</sub> = 50                             | .1 mpł                               | n (Exhibit      | 25-19)                      |                     |            |  |
|  | (Exhibit 25-19)            |                            |                          |  | $S_0 = 59$                                      | .9 mpł                               | n (Exhibit      | 25-19)                      |                     |            |  |
| 1  | (Exhibit 25-14)            |                            |                          |  | 1.  |                                      | n (Exhibit      |                             |                     |            |  |
| •  | ,                          |                            |                          |  |   | 11.1                                 | ,               | ,                           |                     |            |  |

|  |                  | NAIVIE   | S AND RAM                |   |   | ININO             |                   |  |                               |                                    |
|--|------------------|--|--------------------------|---|---|-------------------|-------------------|--|-------------------------------|------------------------------------|
| General Info   |                  |  |                          | Site Infor  |   |                   |                   |  |                               |                                    |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric | 9/08/            |  | J                        | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year | ]<br>]  | Exit 4 S<br>NYSD( |                   |  |                               |                                    |
| Project Description  |                  |  |                          | inarysis i cai  |   | 2020 1            | io-Duliu          |  |                               |                                    |
| Inputs   | ZAIL I           |  |                          |   |   |                   |                   |  |                               |                                    |
| Upstream Adj Ram   | p                | Terrain: Leve                                    |                          |   |   |                   |                   |  | Downstrea<br>Ramp             | m Adj                              |
| □ Yes □ O  | n                |  |                          |   |   |                   |                   |  | ✓ Yes                         | <b>☑</b> On                        |
| ™ No □ O   | ff               |  |                          |   |   |                   |                   |  | □ No                          | ☐ Off                              |
| L <sub>up</sub> = ft   |                  | S  | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4                             | 0.0 mp            | oh                |  | 401111                        | 3100 ft                            |
| V <sub>u</sub> = veh/  |                  |  | Sketch (                 | show lanes, L <sub>A</sub>                                  |   |                   |                   |  | V <sub>D</sub> =              | 450 <b>veh</b> /l                  |
| Conversion   |                  | der Base (                                       | Conditions               |   |   |                   |                   |  | 1                             |                                    |
| (pc/h)   | V<br>(Veh/hr)    | PHF  | Terrain                  | %Truck  | %Rv   |                   | f <sub>HV</sub>   | f <sub>p</sub>                         | v = V/PHF                     | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 3000             | 0.92   | Level                    | 2   | 0   | 0.                | 990               | 1.00                                   | 329                           | 93                                 |
| Ramp   | 620              | 0.92   | Level                    | 2   | 0   | 0.                | 990               | 1.00                                   | 68                            | 1                                  |
| UpStream   |                  | <del>                                     </del> |                          |   |   | ╀                 |                   |  |                               |                                    |
| DownStream   | 450              | 0.87   | Level                    | 1   | 0   | 0.                | 995               | 1.00                                   | 52                            | 0                                  |
| Estimation a   |                  | Merge Areas                                      |                          |   | Fatimati  | ion c             |                   | Diverge Areas                          |                               |                                    |
| Estimation o   | 12 12            |  |                          |   | Estimati  | on c              | ) V 12            |  |                               |                                    |
|  | $V_{12} = V_{F}$ | (P <sub>FM</sub> )                               |                          |   |   |                   | V <sub>12</sub> = | = V <sub>R</sub> + (V <sub>F</sub> - V | <sub>R</sub> )P <sub>FD</sub> |                                    |
| L <sub>EQ</sub> =  | (Equ             | ation 25-2 or                                    | 25-3)                    |   | L <sub>EQ</sub> =                               |                   | (                 | Equation 25-8                          | 3 or 25-9)                    |                                    |
| P <sub>FM</sub> =  | using            | Equation (E                                      | xhibit 25-5)             |   | P <sub>FD</sub> =                               |                   | 0                 | .646 using Ed                          | quation (Exhi                 | bit 25-12)                         |
| V <sub>12</sub> =  | pc/h             |  |                          |   | V <sub>12</sub> =                               |                   |                   | 369 pc/h                               |                               |                                    |
| V <sub>3</sub> or V <sub>av34</sub>                                  | pc/h             | (Equation 25                                     | -4 or 25-5)              |   | V <sub>3</sub> or V <sub>av34</sub>             |                   |                   | 24  pc/h (Equa                         | ation 25-15                   | or 25-16)                          |
| Is $V_3$ or $V_{av34} > 2.7$   |                  |  | ,                        |   |   | > 2.7             |                   | Yes Mo                                 |                               | 0. 20 .0,                          |
| Is $V_3$ or $V_{av34} > 1.5$   |                  |  |                          |   |   |                   |                   | Yes ✓ No                               |                               |                                    |
| If Yes,V <sub>12a</sub> =  | ·=               | (Equation 25                                     | -8)                      |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |                   |                   |  |                               |                                    |
| Capacity Ch  |                  | (Equation 25                                     | -0)                      |   |   |                   |                   | on (Equation                           | 123-10)                       |                                    |
| Сарасну Сп   | Actual           |  | apacity                  | LOS F?  | Capacity  | CII               | Actual            | Co                                     | pacity                        | LOS F                              |
|  | Actual           |  | арасну                   | LUST!   | \/  |                   |                   | Exhibit 25-1                           | 1                             |                                    |
| .,   |                  | I I  |                          |   | V <sub>F</sub>                                  | ``                | 3293              |  | _                             | No                                 |
| V <sub>FO</sub>  |                  | Exhibit 25-7                                     |                          |   | $V_{FO} = V_{F}$                                | - V <sub>R</sub>  | 2612              | Exhibit 25-1                           | 4 6780                        | No                                 |
|  |                  |  |                          |   | V <sub>R</sub>                                  |                   | 681               | Exhibit 25-3                           | 3 2100                        | No                                 |
| Flow Enterin   | g Merge In       | fluence A  | rea                      |   | Flow En   | terir             | g Dive            | rge Influen                            | ce Area                       |                                    |
| -  | Actual           | 1  | Desirable                | Violation?  |   | 1                 | Actual            | Max Desiral                            |                               | Violation                          |
| V <sub>R12</sub>   |                  | Exhibit 25-7                                     |                          |   | V <sub>12</sub>                                 |                   | 2369              | Exhibit 25-14                          | 4400:All                      | No                                 |
| Level of Ser   | vice Deterr      | nination (i                                      | f not F)                 |   | Level of  | Ser               | vice De           | terminatio                             | n (if not l                   | <del></del>                        |
| $D_R = 5.475 + 0$  |                  |  |                          |   | 1   |                   |                   | .0086 V <sub>12</sub> - 0.             | •                             |                                    |
| D <sub>R</sub> = (pc/m   |                  | 12   | n                        |   | L   |                   | /mi/ln)           | 12                                     | D                             |                                    |
| LOS = (Exhib   | oit 25-4)        |  |                          |   | LOS = C   | (Exhi             | bit 25-4)         |  |                               |                                    |
| Speed Deter  | mination         |  |                          |   | Speed D   | •                 |                   | on                                     |                               |                                    |
| •  |                  |  |                          |   |   |                   | xhibit 25         |  |                               |                                    |
| M <sub>S</sub> = (Exibit 2   |                  |  |                          |   |   | ,                 | (Exhibit          | *                                      |                               |                                    |
|  | hibit 25-19)     |  |                          |   |   | -                 |                   |  |                               |                                    |
| nph (Exhibit 25-19)  |                  |  |                          |   | 1.  | -                 | (Exhibit          |  |                               |                                    |
| mph (Exhibit 25-14)  |                  |  |                          |   | S = 52  | n                 | /E 1 '1 '4        | 25-15)                                 |                               |                                    |

|   | 1 17 11                                  | III O AILD                   |  | CTIONS W                     |  | <u> </u>   |            |                          |                      |                                    |
|---|--|------------------------------|--|------------------------------|--|--|------------|--------------------------|----------------------|------------------------------------|
| General Info  | rmation                                  |                              |  | Site Infor                   | mation   |  |            |                          |                      |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 9/08/                                    |                              | Freeway/Dir of Travel<br>Junction<br>Jurisdiction<br>Analysis Year |                              |  | Southbound I-87 Exit 4 SB On-Ramp NYSDOT 2026 No-Build |            |                          |                      |                                    |
| Project Description   |  |                              |  |                              |  |  |            |                          |                      |                                    |
| Inputs  |  |                              |  |                              |  |  |            |                          |                      |                                    |
| Jpstream Adj Ramp   |  | Terrain: Level               |  |                              |  |  |            |                          | Downstrea<br>Ramp    | am Adj                             |
| Yes O   |  |                              |  |                              |  |  |            |                          | ☐ Yes                | ☐ On                               |
| □ No □ Of   | T .                                      |                              |  |                              |  |  |            |                          | ™ No                 | ☐ Off                              |
| - <sub>up</sub> = 2035  | ft                                       |                              |  |                              |  |  |            |                          | L <sub>down</sub> =  | ft                                 |
| $v_{u} = 450 \text{ v}$   | eh/h                                     | S                            | <sub>FF</sub> = 56.0 mph<br>Sketch ( s                             | show lanes, L <sub>A</sub> , | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$                                   | 10.0 mpl   | า          |                          | V <sub>D</sub> =     | veh/h                              |
| Conversion t  | o pc/h Und                               | der Base C                   | Conditions   |                              | _  |  |            |                          |                      |                                    |
| (pc/h)  | V<br>(Veh/hr)                            | PHF                          | Terrain  | %Truck                       | %Rv  | f  | HV         | f <sub>p</sub>           | v = V/PHF            | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 2850                                     | 0.92                         | Level  | 2                            | 0  | 0.9  | 90         | 1.00                     | 3                    | 129                                |
| Ramp  | 1110                                     | 0.93                         | Level  | 4                            | 0  | 0.9  | 80         | 1.00                     | 1                    | 217                                |
| UpStream  | 450                                      | 0.87                         | Level  | 1                            | 0  | 0.9  | 95         | 1.00                     | !                    | 520                                |
| DownStream  | <u> </u>                                 | Marga Araga                  |  |                              | -  |  |            | Diverse Areas            | <u> </u>             |                                    |
| Estimation o  |  | Merge Areas                  |  |                              | Estimati   | ion o  |            | Diverge Areas            | <b>5</b>             |                                    |
|   | V <sub>12</sub> = V <sub>F</sub>         | (D)                          |  |                              |  |  |            |                          |                      |                                    |
| _   | · <del>-</del> ·                         | ation 25-2 or                | 25 2\  |                              |  |  |            | $V_R + (V_F - V_F)$      |                      |                                    |
| EQ =  |  |                              |  |                              | L <sub>EQ</sub> =  |  |            | (Equation 2              |                      |                                    |
| ) <sub>FM</sub> =   |  |                              | on (Exhibit 25-5)  |                              | P <sub>FD</sub> =  |  |            | using Equat              | tion (Exhibit        | 25-12)                             |
| 1 <sub>12</sub> =   | 1886 <sub> </sub>                        |                              | n 05 4 az 05   |                              | V <sub>12</sub> =  |  |            | pc/h                     |                      |                                    |
| $V_3$ or $V_{av34}$   | 1243  <br>5)                             | pc/h (Equatio                | n 25-4 or 25-  |                              | V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 25-15 or 25-16) |  |            |                          |                      |                                    |
| Is $V_3$ or $V_{av34} > 2,70$   | ,  | s 🗹 No                       |  |                              | Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No                        |  |            |                          |                      |                                    |
| Is $V_3$ or $V_{av34} > 1.5$  |  |                              |  |                              | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                     |  |            |                          |                      |                                    |
| f Yes,V <sub>12a</sub> =  | · <del>-</del>                           | (Equation 25                 | ·8)  |                              | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)                    |  |            |                          |                      |                                    |
| Capacity Che  | ecks                                     |                              |  |                              | Capacit  | y Che  | ecks       |                          |                      |                                    |
|   | Actual                                   | Ca                           | pacity   | LOS F?                       |  |  | Actual     | С                        | apacity              | LOS F                              |
|   |  |                              |  |                              | $V_{F}$  |  |            | Exhibit 25               | -14                  |                                    |
| $V_{FO}$  | 4346                                     | Exhibit 25-7                 |  | No                           | $V_{FO} = V_{F}$   | - V <sub>R</sub>                                       |            | Exhibit 25               | -14                  |                                    |
|   |  |                              |  |                              | $V_R$  |  |            | Exhibit 25               | 5-3                  |                                    |
| low Enterin   | g Merge In                               | fluence A                    | rea  | •                            |  | terin  | g Dive     | erge Influe              | nce Are              | <del></del><br>a                   |
|   | Actual                                   |                              | esirable   | Violation?                   |  | Ac   | ctual      | Max Des                  | sirable              | Violation?                         |
| V <sub>R12</sub>  | 3103                                     | Exhibit 25-7                 | 4600:All   | No                           | V <sub>12</sub>  |  |            | Exhibit 25-14            |                      |                                    |
| Level of Serv   | rice Detern                              | nination (i                  | not F)   |                              | Level of   | Serv   | rice De    | eterminati               | on (if no            | t F)                               |
| $D_{R} = 5.475 +$   | 0.00734 v <sub>R</sub> + 0               | 0.0078 V <sub>12</sub> - 0.0 | 0627 L <sub>A</sub>  |                              |  | $D_R = 4$  | .252 + (   | 0.0086 V <sub>12</sub> - | 0.009 L <sub>D</sub> |                                    |
| $O_R = 23.5 \text{ (pc/mi/ln)}$                                       |  |                              |  |                              | $D_R = (p$   | c/mi/ln  | 1)         |                          |                      |                                    |
| .OS = C (Exhi   | bit 25-4)                                |                              |  |                              | LOS = (E   | xhibit   | 25-4)      |                          |                      |                                    |
| Speed Deteri  | mination                                 |                              |  |                              | Speed L  | Deterr   | minati     | on                       |                      |                                    |
| M <sub>S</sub> = 0.336 (Ex  | ibit 25-19)                              |                              |  |                              | $D_s = (E)$  | xhibit 25  | 5-19)      |                          |                      |                                    |
| =   | (Exhibit 25-19)                          |                              |  |                              | S <sub>R</sub> = m <sub>l</sub>                                    | ph (Exhi   | ibit 25-19 | )                        |                      |                                    |
| $S_0 = 53.3 \text{ mph (Exhibit 25-19)}$                              |  |                              |  |                              | $S_0 = m_1$  | ph (Exhi   | ibit 25-19 | )                        |                      |                                    |
| $p_0 = 53.3 \text{ mph}$  | $S_0 = 51.9 \text{ mph (Exhibit 25-14)}$ |                              |  |                              |  |  |            |                          |                      |                                    |
|   |  |                              |  |                              | S = m  | ph (Exhi   | ibit 25-15 | )                        |                      |                                    |

|   | 11/71                            | III O AIND                   | 117 111111 00111   | CTIONS W   | 01110112  |   |                |  |                                       |  |
|---|----------------------------------|------------------------------|--|--|---|---|----------------|--|---------------------------------------|--|
| General Info  | rmation                          |                              |  | Site Infor   | mation  |   |                |  |                                       |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 9/08/<br>d PM                    | 2011                         | Ju<br>Ju   | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | E<br>N  | Southbound I-<br>Exit 5 SB On-<br>NYSDOT<br>2026 No-Build | Ramp           |  |                                       |  |
| Project Description   | Exit 4                           |                              |  |  |   |   |                |  |                                       |  |
| Inputs  |                                  | IT a marker of a const       |  |  |   |   |                |  |                                       |  |
| Upstream Adj Ramp  Yes  O   |                                  | Terrain: Level               |  |  |   |   |                | Downstr<br>Ramp                                | eam Adj                               |  |
| ✓ No    O   |                                  |                              |  |  |   |   |                | ✓ Yes  | ☑ On                                  |  |
| I INO I O   | II.                              |                              |  |  |   |   |                | □ No   | ☐ Off                                 |  |
| - <sub>up</sub> = ft  |                                  | S                            | FF = 56.0 mph  |  | S <sub>FR</sub> = 40                            | 0.0 mph   |                | L <sub>down</sub> =                            | 2035 ft                               |  |
| V <sub>u</sub> = veh/h  | 1                                |                              | Sketch ( show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>f</sub> ) |  |   |   |                | V <sub>D</sub> =                               | 1110 veh/h                            |  |
| Conversion t  | o pc/h Und                       | der Base C                   | Conditions   |  | _   |   |                |  |                                       |  |
| (pc/h)  | V<br>(Veh/hr)                    | PHF                          | Terrain  | %Truck   | %Rv   | f <sub>HV</sub>   | f <sub>p</sub> | v = V/PH                                       | IF x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway   | 2600                             | 0.92                         | Level  | 2  | 0   | 0.990   | 1.00           |  | 2854                                  |  |
| Ramp  | 450                              | 0.87                         | Level  | 1  | 0   | 0.995   | 1.00           |  | 520                                   |  |
| UpStream<br>DownStream  | 1110                             | 0.93                         | Level  | 4  | 0   | 0.980   | 1.00           | _  | 1217                                  |  |
| Downstream  |                                  | Merge Areas                  | Level  | 7  |   | 0.700   | Diverge /      | Areas  | 1217                                  |  |
| Estimation o  |                                  | J                            |  |  | Estimati  | on of v <sub>12</sub>                                     |                |  |                                       |  |
|   | V <sub>12</sub> = V <sub>F</sub> | (P <sub>rм</sub> )           |  |  | 1   |   |                | / \/\D   |                                       |  |
| -EQ =   |                                  | ation 25-2 or                | 25-3)  |  |   | V 12  |                | <sub>F</sub> - V <sub>R</sub> )P <sub>FD</sub> | 0)                                    |  |
| P <sub>FM</sub> =   |                                  |                              | on (Exhibit 25-5)  |  | L <sub>EQ</sub> =                               |   |                | on 25-8 or 25                                  |                                       |  |
| тм<br>/ <sub>12</sub> =   | 1720                             |                              | OTT (EXTIIDIT 23-3)  |  | P <sub>FD</sub> =                               |   | _              | quation (Exhib                                 | it 25-12)                             |  |
|   |                                  |                              | n 25-4 or 25-  |  | V <sub>12</sub> =                               |   | pc/h           |  |                                       |  |
| $V_3$ or $V_{av34}$   | 5)                               | oom (Equano                  | 20 1 0. 20   |  | V <sub>3</sub> or V <sub>av34</sub>             | "   |                | uation 25-15 or 2<br>—                         | 5-16)                                 |  |
| Is $V_3$ or $V_{av34} > 2,70$   | 00 pc/h? 🥅 Ye                    | s 🗹 No                       |  |  | Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No     |   |                |  |                                       |  |
| Is $V_3$ or $V_{av34} > 1.5$  | * V <sub>12</sub> /2             | s 🗹 No                       |  |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No  |   |                |  |                                       |  |
| f Yes,V <sub>12a</sub> =  | pc/h                             | (Equation 25                 | -8)  |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |   |                |  |                                       |  |
| Capacity Che  | ecks                             |                              |  |  | Capacity  | / Checks  |                |  |                                       |  |
|   | Actual                           | Ca                           | apacity  | LOS F?   |   | Act   | ual            | Capacity                                       | LOS F?                                |  |
|   |                                  |                              |  |  | $V_{F}$   |   | Exhi           | bit 25-14                                      |                                       |  |
| $V_{FO}$  | 3374                             | Exhibit 25-7                 |  | No   | $V_{FO} = V_{F}$                                | · V <sub>R</sub>  | Exhi           | bit 25-14                                      |                                       |  |
|   |                                  |                              |  |  | $V_R$   |   | Exhi           | bit 25-3                                       |                                       |  |
| Flow Enterin  | g Merge In                       | fluence A                    | rea  |  | Flow En   | tering Di   | verge In       | fluence Ar                                     | ea                                    |  |
|   | Actual                           | Max [                        | Desirable  | Violation?   |   | Actual  | Ma             | x Desirable                                    | Violation?                            |  |
| V <sub>R12</sub>  | 2240                             | Exhibit 25-7                 | 4600:AII   | No   | V <sub>12</sub>                                 |   | Exhibit 2      | 5-14   | <u> </u>                              |  |
| Level of Serv   |                                  |                              |  |  | Level of  | Service   | Determi        | nation (if n                                   | ot F)                                 |  |
| $D_R = 5.475 +$   | 0.00734 v <sub>R</sub> + 0       | 0.0078 V <sub>12</sub> - 0.0 | 0627 L <sub>A</sub>  |  |   | $P_{R} = 4.252$   | + 0.0086 \     | / <sub>12</sub> - 0.009 L <sub>D</sub>         |                                       |  |
| D <sub>R</sub> = 17.1 (pc/mi/ln)                                      |                                  |                              |  |  | $D_R = (p_0)$                                   | c/mi/ln)  |                |  |                                       |  |
| OS = B (Exhi  | bit 25-4)                        |                              |  |  | LOS = (E  | xhibit 25-4)  |                |  |                                       |  |
| Speed Deteri  | mination                         |                              |  |  | <del>-</del>                                    | etermina  | ntion          |  |                                       |  |
| M <sub>S</sub> = 0.286 (Ex  | ibit 25-19)                      |                              |  |  | $D_{S} = (E)$                                   | khibit 25-19)   |                |  |                                       |  |
| $S_{R}$ = 52.0 mph (Exhibit 25-19)                                    |                                  |                              |  |  | S <sub>R</sub> = mp                             | h (Exhibit 25   | 19)            |  |                                       |  |
| - R 02.0p   |                                  |                              |  |  |   | S <sub>0</sub> = mph (Exhibit 25-19)                      |                |  |                                       |  |
|   | (Exhibit 25-19)                  |                              |  |  | $S_0 = mp$                                      | h (Exhibit 25   | ·19)           |  |                                       |  |

|  |  |                            | FREEWA   | Y WEAV   | ING WOF  | KSHEE             | T  |                |              |
|--|--|----------------------------|--|----------|--|-------------------|--|----------------|--------------|
| Genera   | l Informat                                   | ion                        |  |          | Site Info  | rmation           |  |                |              |
| Analyst<br>Agency/Co<br>Date Perfor<br>Analysis Tir  | med  | SEB<br>CHA<br>9/08/2<br>PM | 011  |          | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location          | I-87 Northbound<br>Exit 2E on to 2W off<br>NYSDOT<br>2026 No-Build |                |              |
| Inputs   |  |                            |  |          |  |                   |  |                |              |
| Freeway free-flow speed, S <sub>FF</sub> (mi/h) 56 Weaving number of lanes, N 4 Weaving seg length, L (ft) 815 Terrain Lev |  |                            | Weaving type<br>Volume ratio, VR<br>Weaving ratio, R |          |  | A<br>0.24<br>0.35 |  |                |              |
| Conver   | sions to p                                   | c/h Unde                   | r Base C   | ondition | 1  | r                 |  |                | _            |
| (pc/h)   | V  | PHF                        | Truck %  | RV %     | E <sub>T</sub>   | E <sub>R</sub>    | f <sub>HV</sub>  | fp             | ٧            |
| $V_{o1}$   | 3930   | 0.86                       | 2  | 0        | 1.5  | 1.2               | 0.990  | 1.00           | 4615         |
| $V_{02}$   | 0  | 0.92                       | 2  | 0        | 1.5  | 1.2               | 0.990  | 1.00           | 0            |
| $V_{w1}$   | 880  | 0.92                       | 2  | 0        | 1.5  | 1.2               | 0.990  | 1.00           | 966          |
| $V_{w2}$   | 470  | 0.92                       | 2  | 0        | 1.5  | 1.2               | 0.990  | 1.00           | 515          |
| $V_{\rm w}$  |  |                            | •  | 1481     | V <sub>nw</sub>  |                   |  | •              | 4615         |
| V  | 7  |                            |  |          | 1  | ı                 |  |                | 6096         |
| Weavin   | g and No                                     | n-Weavin                   | g Speeds   | <b>S</b> |  |                   |  |                |              |
|  |  |                            | Unconstr   | 4        |  |                   |  | trained        |              |
| a (Exhibit 2   | 1 ()   | Weaving<br>0.15            | <u> </u>   |          | ving (i = nw)<br>035                                       | Weavir            | ng (i = w)   | Non-Wea        | ving ( = nw) |
| b (Exhibit 2   |  | 2.20                       |  |          | 00   |                   |  |                |              |
| c (Exhibit 2   |  | 0.97                       |  | 1.30     |  |                   |  |                |              |
| d (Exhibit 2   |  | 0.80                       |  | <u> </u> | 75   |                   |  |                |              |
| Weaving intens Weaving and n   |  | 1.39                       |  |          | 75   |                   |  |                |              |
| speeds, Si (mi/  | h)   | 34.2                       |  |          | .25  |                   |  |                |              |
| Maximum r  | lanes required<br>number of lanes If Nw < Nw | s, Nw (max)                | •  |          | 1.35<br>1.40   | if Nw > Nv        | v (max) constr   | rained operati | on           |
| Weavin   | g Segmer                                     | nt Speed,                  |  |          | Service,   | and Cap           | acity  |                |              |
|  | egment speed,                                |                            |  | 39.30    |  |                   |  |                |              |
|  | egment density                               | , D (pc/mi/ln)             |  | 38.78    |  |                   |  |                |              |
| Level of se  |  |                            |  | E        |  |                   |  |                |              |
|  | base condition                               |                            | , // <sub>e</sub> \                                  | 6505     |  |                   |  |                |              |
|  | a 15-minute fl                               |                            |  | 6441     |  |                   |  |                |              |
|  | a full-hour vol                              | ume, c <sub>h</sub> (ven/n | )  | 5638     |  |                   |  |                |              |
| Notes  |  |                            |  |          |  |                   |  |                |              |

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HCS+<sup>TM</sup> Version 5.3

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  |                            | FREEWA   | Y WEAV | ING WOR  | KSHEE          | Τ               |   |              |  |
|--|----------------------------|--|--------|--|----------------|-----------------|---|--------------|--|
| <b>General Informat</b>  | ion                        |  |        | Site Info  | rmation        |                 |   |              |  |
| Analyst<br>Agency/Company<br>Date Performed<br>Analysis Time Period  | SEB<br>CHA<br>6/22/2<br>PM | 011  |        | Weaving Seg Location E Jurisdiction N                |                |                 | -87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2026 No-Build |              |  |
| Inputs   |                            |  |        | 1  |                |                 |   |              |  |
| Freeway free-flow speed, S <sub>FF</sub> (mi/h) 56 Weaving number of lanes, N 4 Weaving seg length, L (ft) 810 Terrain Lev |                            |  | el     | Weaving type<br>Volume ratio, VR<br>Weaving ratio, R |                |                 | A<br>0.2<br>0.2   |              |  |
| Conversions to p   | 1                          | er Base C                                      | 1      |  |                | 1               |   | 1            |  |
| (pc/h) V   | PHF                        | Truck %  | RV %   | E <sub>T</sub>                                       | E <sub>R</sub> | f <sub>HV</sub> | fp  | V            |  |
| V <sub>o1</sub> 3150   | 0.92                       | 2  | 0      | 1.5  | 1.2            | 0.990           | 1.00  | 3458         |  |
| V <sub>02</sub> 0  | 0.92                       | 2  | 0      | 1.5  | 1.2            | 0.990           | 1.00  | 0            |  |
| V <sub>w1</sub> 850  | 0.92                       | 2  | 0      | 1.5  | 1.2            | 0.990           | 1.00  | 933          |  |
| V <sub>w2</sub> 250  | 0.92                       | 2  | 0      | 1.5  | 1.2            | 0.990           | 1.00  | 274          |  |
| V <sub>w</sub>   | •                          | _  | 1207   | V <sub>nw</sub>                                      |                | •               | •   | 3458         |  |
| V  |                            |  |        |  | l              |                 |   | 4665         |  |
| Weaving and Nor  | า-Weavin                   | g Speeds                                       | 5      |  |                |                 |   |              |  |
|  |                            | Unconstr                                       | 4      |  |                |                 | trained   |              |  |
| o (Eyhibit 24 ()   | Weaving                    |  |        | Non-Weaving (i = nw) Weaving                         |                |                 | Non-Wea   | ving ( = nw) |  |
| a (Exhibit 24-6)<br>b (Exhibit 24-6)   | 0.15<br>2.20               |  |        | 0.0035<br>4.00                                       |                |                 |   |              |  |
| c (Exhibit 24-6)   | 0.97                       |  | 1      | .30  |                |                 |   |              |  |
| d (Exhibit 24-6)   | 0.80                       |  |        | .75  |                |                 |   |              |  |
| Weaving intensity factor, Wi   | 1.11                       |  | 0.     | .56  |                |                 |   |              |  |
| Weaving and non-weaving<br>speeds, Si (mi/h)   | 36.8                       | 4  | 44     | .46  |                |                 |   |              |  |
| Number of lanes required f<br>Maximum number of lanes  | , Nw (max)                 |  |        | 1.35<br>1.40   | _              |                 |   |              |  |
| If Nw < Nw   | <u> </u>                   |  |        | 1.0  |                | v (max) constr  | rained operati  | on           |  |
| Weaving Segmen   |                            |  |        | Service,   | and Cap        | acity           |   |              |  |
| Weaving segment speed,   |                            |  | 42.20  |  |                |                 |   |              |  |
| Weaving segment density,<br>Level of service, LOS  | 27.64<br>C                 |  |        |  |                |                 |   |              |  |
| Capacity of base condition   | c. (pc/h)                  |  | 6410   |  |                |                 |   |              |  |
| Capacity as a 15-minute flo  | Б -                        | n/h)   | 6347   |  |                |                 |   |              |  |
| Capacity as a full-hour volu   |                            |  | 5839   |  |                |                 |   |              |  |
| Notes  | - n (- 51, m)              | <u>,                                      </u> | 2007   |  |                |                 |   |              |  |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

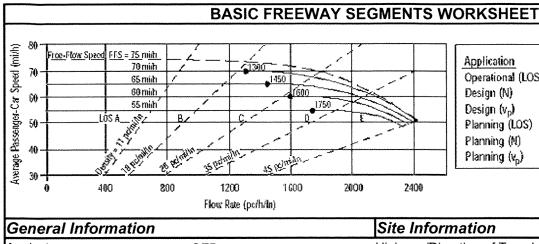
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such



| Application                | <u>Input</u>             | Output                |
|----------------------------|--------------------------|-----------------------|
| Operational (LOS)          | FFS, N, v <sub>D</sub>   | LOS, S, I             |
| Design (N)                 | FFS, LOS, v <sub>p</sub> | N, S, D               |
| Design (v <sub>p</sub> )   | FFS, LOS, N              | Vp. S. D              |
| Planning (LOS)             | FFS, N, AADT             | LOS, S, I             |
| Planning (M)               | FFS, LOS, AADT           | N, S, D               |
| Planning (v <sub>D</sub> ) | FFS, LOS, N              | V <sub>n</sub> , S, D |

| General Information                     |                          |          | Site Information  |           |                                       |  |  |
|---|--------------------------|----------|---|-----------|---------------------------------------|--|--|
| Analyst                                 | SEB                      |          | Highway/Direction of Travel                               | Northbou  | ınd I-87                              |  |  |
| Agency or Company                       | CHA                      |          | From/To   | Exit 2 to |                                       |  |  |
| Date Performed                          | 6/22/2011                |          | Jurisdiction  | NYSDOT    |                                       |  |  |
| Analysis Time Period                    | PM                       |          | Analysis Year   | 2036 No-  | -Build                                |  |  |
| Project Description Exit 4              |                          |          |   |           |                                       |  |  |
| ✓ Oper.(LOS)                            |                          |          | Des.(N)   | Pla       | nning Data                            |  |  |
| Flow Inputs                             |                          |          |   |           |                                       |  |  |
| Volume, V                               | 5200                     | veh/h    | Peak-Hour Factor, PHF                                     | 0.86      |                                       |  |  |
| AADT                                    |                          | veh/day  | %Trucks and Buses, P <sub>T</sub>                         | 2         |                                       |  |  |
| Peak-Hr Prop. of AADT, K                |                          |          | %RVs, P <sub>R</sub>                                      | 0         |                                       |  |  |
| Peak-Hr Direction Prop, D               |                          |          | General Terrain:  | Level     |                                       |  |  |
| DDHV = AADT x K x D                     | 4.00                     | veh/h    | Grade % Length  | mi        |                                       |  |  |
| Driver type adjustment                  | 1.00                     |          | Up/Down %   |           |                                       |  |  |
| Calculate Flow Adjustr                  |                          |          |   |           |                                       |  |  |
| f <sub>p</sub>                          | 1.00                     |          | E <sub>R</sub>  | 1.2       |                                       |  |  |
| E <sub>T</sub>                          | 1.5                      |          | $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$              | 0.990     |                                       |  |  |
| Speed Inputs                            |                          |          | Calc Speed Adj and FF                                     | S         |                                       |  |  |
| _ane Width                              | 12.0                     | ft       | f <sub>LW</sub>   |           | mi/h                                  |  |  |
| Rt-Shoulder Lat. Clearance              | 6.0                      | ft       |   |           | mi/h                                  |  |  |
| nterchange Density                      | 0.50                     | l/mi     | f <sub>LC</sub>   |           |                                       |  |  |
| Number of Lanes, N                      | 3                        |          | f <sub>ID</sub>   |           | mi/h                                  |  |  |
| FFS (measured)                          | 56.0                     | mi/h     | f <sub>N</sub>  |           | mi/h                                  |  |  |
| Base free-flow Speed, BFFS              |                          | mi/h     | FFS   | 56.0      | mi/h                                  |  |  |
| LOS and Performance                     | Measures                 |          | Design (N)  |           |                                       |  |  |
|   |                          |          | Design (N)  |           | · · · · · · · · · · · · · · · · · · · |  |  |
| Operational (LOS)                       |                          |          | Design LOS  |           |                                       |  |  |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$ | x f <sub>HV</sub> x 2036 | pc/h/ln  | $v_p = (V \text{ or DDHV}) / (PHF \times N)$              | rf v      |                                       |  |  |
| <sup>F</sup> p)                         | 2030                     | ролил    | 1 '   | 'HV ^     | pc/h                                  |  |  |
| 5                                       | 54.6                     | mi/h     | f <sub>p</sub> )  |           |                                       |  |  |
| $D = v_p / S$                           | 37.3                     | pc/mi/ln | S   |           | mi/h                                  |  |  |
| LOS                                     | E                        | L        | $D = v_p / S$   |           | pc/mi/ln                              |  |  |
|   |                          |          | Required Number of Lanes, N                               | l         |                                       |  |  |
| Glossary                                |                          |          | Factor Location   |           |                                       |  |  |
| N - Number of lanes                     | S - Speed                |          | F - Evhibite 22 8 22 10                                   |           | f <sub>LW</sub> - Exhibit 23-4        |  |  |
| V - Hourly volume                       | D - Density              |          | E <sub>R</sub> - Exhibits 23-8, 23-10                     | 1.4       |                                       |  |  |
| v <sub>n</sub> - Flow rate              | FFS - Free-flow          | v speed  | E <sub>T</sub> - Exhibits 23-8, 23-10, 23-                | 17        | f <sub>LC</sub> - Exhibit 23-5        |  |  |
| LOS - Level of service                  | BFFS - Base fr           |          | f <sub>p</sub> - Page 23-12 f <sub>N</sub> - Exhibit 23-6 |           |                                       |  |  |
| DDHV - Directional design ho            |                          |          | LOS, S, FFS, v <sub>p</sub> - Exhibits 23-                | -2, 23-3  | f <sub>ID</sub> - Exhibit 23-7        |  |  |
| JULIA - Directional design fic          | or volume                |          |   |           |                                       |  |  |

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#### BASIC FREEWAY SEGMENTS WORKSHEET Average Passenger-Car Speed (milth) Free-Flow Speed FFS = 75 mish Application Input Output 70 mith 70 Operational (LOS) FFS, N, v<sub>p</sub> LOS, S, D 65 mich 60 mish Design (N) FFS, LOS, v, N, S, D 60 55 milh FFS, LOS, N Design (v<sub>p</sub>) v<sub>p</sub>, S, D 50 Planning (LOS) FFS, N, AADT LOS, S, D Planning (M) FFS, LOS, AADT N, S, D 40 Planning (v<sub>n</sub>) FFS, LOS, N v<sub>p</sub>, S, D 400 008 2000 2400 1200 1600 Flow Rate (pc/h/lin) General Information Site Information Analyst Highway/Direction of Travel SEB Southbound I-87 Agency or Company From/To Exit 4 to Exit 2 CHA Date Performed Jurisdiction NYSDOT 6/22/2011 **Analysis Time Period** Analysis Year 2036 No-Build PMProject Description Exit 4 Des.(N) Oper.(LOS) Planning Data Flow Inputs Volume, V 4100 Peak-Hour Factor, PHF 0.92 veh/h AADT veh/day %Trucks and Buses, P<sub>⊤</sub> 2 %RVs, P<sub>R</sub> Peak-Hr Prop. of AADT, K 0 Peak-Hr Direction Prop. D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi 1.00 Up/Down % Driver type adjustment Calculate Flow Adjustments 1.00 $\mathsf{E}_\mathsf{R}$ 1.2 $E_T$ 1.5 0.990 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Speed Inputs Calc Speed Adj and FFS Lane Width 12.0 ft $f_{LW}$ mi/h ft Rt-Shoulder Lat. Clearance 6.0 $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h Number of Lanes, N 3 $f_N$ mi/h FFS (measured) 56.0 mi/h FFS 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times V_p)$

| S<br>D = v <sub>p</sub> / S<br>LOS   | 56.0 mi/h<br>26.8 pc/mi/lr<br>D   | S<br>D = v <sub>p</sub> / S<br>Required Number of Lanes, N   | mi/h<br>pc/mi/ln  |
|--|---|--|---|
| Glossary   |   | Factor Location  |   |
| <ul> <li>N - Number of lanes</li> <li>V - Hourly volume</li> <li>v<sub>p</sub> - Flow rate</li> <li>LOS - Level of service</li> <li>DDHV - Directional design heads</li> </ul> | S - Speed D - Density FFS - Free-flow speed BFFS - Base free-flow spee our volume | E <sub>R</sub> - Exhibits23-8, 23-10<br>E <sub>T</sub> - Exhibits 23-8, 23-10, 23-11<br>f <sub>p</sub> - Page 23-12<br>LOS, S, FFS, v <sub>p</sub> - Exhibits 23-2, 23-3 | f <sub>LW</sub> - Exhibit 23-4<br>f <sub>LC</sub> - Exhibit 23-5<br>f <sub>N</sub> - Exhibit 23-6<br>f <sub>ID</sub> - Exhibit 23-7 |

1500

pc/h/ln

 $V_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 

pc/h

#### BASIC FREEWAY SEGMENTS WORKSHEET Average Passenger-Car Speed (milh) Free-Flow Spred FFS = 75 mid **Application** Input Output 70 mish 70 Operational (LOS) FFS, N, v<sub>p</sub> LOS, S. D 65 mith 60 midh FFS, LOS, VD Design (N) N, S, D 60 55 milh FFS, LOS, N Design (v<sub>p</sub>) Vp. S. D 50 LOS, S, D Planning (LOS) FFS. N. AADT Planning (M) FFS, LOS, AADT N, S, D 40 Planning (v<sub>n</sub>) FFS, LOS, N Vov. S. D. 30 400 008 1600 1200 2000 2400 Flow Rate (pc/h/ln) General Information Site Information Analyst SEB Highway/Direction of Travel Northbound I-87 Agency or Company From/To CHA Exit 4 off to Exit 4 on Date Performed 9/09/2011 Jurisdiction NYSDOT Analysis Time Period Analysis Year 2036 No-Build PM Project Description Exit 4 Oper.(LOS) Des.(N) □ Planning Data Flow Inputs Volume, V 4600 Peak-Hour Factor, PHF veh/h 0.86 AADT veh/day %Trucks and Buses, P<sub>⊤</sub> 2 Peak-Hr Prop. of AADT, K %RVs, P<sub>R</sub> 0 General Terrain: Peak-Hr Direction Prop. D Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments fp 1.00 Ep 1.2 $E_{T}$ 1.5 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ 0.990 Speed Inputs Calc Speed Adj and FFS Lane Width ft 12.0 $f_{iw}$ mi/h Rt-Shoulder Lat. Clearance 6.0 ft $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h Number of Lanes, N 3 $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 1801 $v_n = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ pc/h/ln $f_p$ pc/h 56.0 mi/h mi/h $D = v_p / S$ 32.2 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS D Required Number of Lanes, N Glossary Factor Location N - Number of lanes S - Speed E<sub>R</sub> - Exhibits23-8, 23-10 f<sub>LW</sub> - Exhibit 23-4 - Hourly volume D - Density E<sub>T</sub> - Exhibits 23-8, 23-10, 23-11 f<sub>IC</sub> - Exhibit 23-5 v<sub>p</sub> - Flow rate FFS - Free-flow speed <sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, $v_{_{D}}$ - Exhibits 23-2, 23-3

DDHV - Directional design hour volume

f<sub>ID</sub> - Exhibit 23-7

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#### Average Passenger-Car Speed (mith) Free-Flow Speed FFS = 75 midt Application Input Output 70 miih Operational (LOS) FFS, N, v<sub>D</sub> LOS, S, D 60 midt FFS, LOS, v<sub>n</sub> Design (N) N, S, D 60 55 milh FFS, LOS, N Design (v<sub>o</sub>) Vp. S. D 50 Planning (LOS) FFS, N, AADT LOS, S, D Planning (M) FFS, LOS, AADT N, S, D 40 Planning (v<sub>n</sub>) FFS, LOS, N V<sub>D</sub>, S, D 30 008 1600 1200 2000 2400 Flow Rate (pc/h/lin) General Information Site Information Analyst Highway/Direction of Travel SEB Southbound I-87 Agency or Company CHA From/To Exit 5 on to Exit 4 on Date Performed Jurisdiction NYSDOT 12/09/2011 Analysis Time Period Analysis Year PM 2036 No-Build Project Description Exit 4 Oper.(LOS) Des.(N) □ Planning Data Flow Inputs Volume, V 2950 Peak-Hour Factor, PHF veh/h 0.92 AADT %Trucks and Buses, P<sub>T</sub> veh/day 2 Peak-Hr Prop. of AADT, K %RVs, P<sub>R</sub> 0 General Terrain: Peak-Hr Direction Prop. D Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments $f_p$ 1.00 ER 1.2 $E_{T}$ 1.5 $f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]$ 0.990 Speed Inputs Calc Speed Adj and FFS Lane Width ft 12.0 $f_{lw}$ mi/h Rt-Shoulder Lat. Clearance 6.0 ft $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h Number of Lanes, N 3 $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 1080 $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ pc/h/ln $f_p$ pc/h $f_p)$ 56.0 mi/h mi/h $D = v_p / S$ 19.3 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS C Required Number of Lanes, N Factor Location Glossary N - Number of lanes S - Speed f<sub>LW</sub> - Exhibit 23-4 E<sub>R</sub> - Exhibits23-8, 23-10 - Hourly volume D - Density f<sub>LC</sub> - Exhibit 23-5 $E_{\tau}$ - Exhibits 23-8, 23-10, 23-11 - Flow rate FFS - Free-flow speed f<sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 BFFS - Base free-flow speed LOS - Level of service LOS, S, FFS, v<sub>o</sub> - Exhibits 23-2, 23-3 f<sub>ID</sub> - Exhibit 23-7 DDHV - Directional design hour volume Generated: 12/12/2011 4:06 PM

## Average Passenger-Car Speed (mi/h) Free-Flow Spred FFS = 75 mish Application Input Output 70 mid 70 Operational (LOS) FFS, N, v<sub>D</sub> 65 midt LOS, S, D 60 mish Design (N) FFS, LOS, V, N, S, D 60 55 mith Design (v<sub>n</sub>) FFS, LOS, N Vp. S. D 50 -Planning (LOS) FFS, N, AADT LOS, S, D Planning (M) FFS, LOS, AADT N, S, D 40 Planning (v<sub>n</sub>) FFS, LOS, N v<sub>p</sub>, S, D 30 008 1200 1600 2000 2400 Flow Rate (pc/h/lin) General Information Site Information Analyst Highway/Direction of Travel SEB Northbound I-87 Agency or Company CHA From/To Exit 4 to Exit 5 Date Performed 6/22/2011 Jurisdiction NYSDOT Analysis Time Period Analysis Year PM 2036 No-Build Project Description Exit 4 ✓ Oper.(LOS) ☐ Des.(N) □ Planning Data Flow Inputs Volume, V 6050 veh/h Peak-Hour Factor, PHF 0.86 AADT veh/day %Trucks and Buses, P<sub>⊤</sub> 2 Peak-Hr Prop. of AADT, K %RVs, PR 0 General Terrain: Peak-Hr Direction Prop. D Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments $f_p$ 1.00 $E_R$ 1.2 ET 1.5 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ 0.990 Speed Inputs Calc Speed Adj and FFS Lane Width 12.0 ft $f_{LW}$ mi/h Rt-Shoulder Lat. Clearance ft 6.0 $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h Number of Lanes, N 3 $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ pc/h/ln $v_n = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ $f_p)$ pc/h $f_p)$ mi/h mi/h $D = v_p / S$ pc/mi/ln $D = v_n / S$ pc/mi/ln LOS F Required Number of Lanes, N Glossary Factor Location N - Number of lanes S - Speed E<sub>R</sub> - Exhibits23-8, 23-10 f<sub>LW</sub> - Exhibit 23-4 - Hourly volume D - Density E<sub>T</sub> - Exhibits 23-8, 23-10, 23-11 f<sub>LC</sub> - Exhibit 23-5 - Flow rate FFS - Free-flow speed f<sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 f<sub>ID</sub> - Exhibit 23-7 DDHV - Directional design hour volume

#### Average Passenger-Car Speed (mith) FFS = 75 mith Free-Flow Speed Application Input Output 70 mids 70 Operational (LOS) FFS, N, VD LOS, S, D 65 mids 60 miih FFS, LOS, VD Design (N) N, S, D 60 55 min FFS, LOS, N vp. S. D Design (v<sub>o</sub>) 50 Planning (LOS) FFS, N. AADT LOS, S, D Planning (M) FFS, LOS, AADT N, S, D 40 Planning (v<sub>o</sub>) FFS, LOS, N Vp. S. D 30 008 1200 1600 2000 2400 Flow Rate (pc/h/ln) General Information Site Information Analyst Highway/Direction of Travel SEB Southbound I-87 Agency or Company From/To CHA Exit 5 to Exit 4 Date Performed 6/22/2011 Jurisdiction NYSDOT Analysis Time Period Analysis Year 2036 No-Build PM Project Description Exit 4 Oper.(LOS) □ Des.(N) □ Planning Data Flow Inputs Volume, V 2750 Peak-Hour Factor, PHF veh/h 0.92 AADT veh/day %Trucks and Buses, P<sub>T</sub> 2 Peak-Hr Prop. of AADT, K %RVs, P<sub>R</sub> 0 General Terrain: Peak-Hr Direction Prop. D Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments 1.00 Ep 1.2 $f_p$ ET 1.5 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ 0.990 Speed Inputs Calc Speed Adj and FFS Lane Width ft 12.0 $f_{iw}$ mi/h Rt-Shoulder Lat. Clearance ft 6.0 $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h Number of Lanes, N 3 $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times I)$ 1006 $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ pc/h/ln $f_p$ pc/h $f_p$ ) 56.0 mi/h mi/h $D = v_D / S$ 18.0 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS В Required Number of Lanes, N Glossary Factor Location N - Number of lanes S - Speed E<sub>R</sub> - Exhibits23-8, 23-10 f<sub>LW</sub> - Exhibit 23-4 - Hourly volume D - Density f<sub>IC</sub> - Exhibit 23-5 $E_{\tau}$ - Exhibits 23-8, 23-10, 23-11 FFS - Free-flow speed Flow rate f<sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, v<sub>o</sub> - Exhibits 23-2, 23-3 f<sub>ID</sub> - Exhibit 23-7 DDHV - Directional design hour volume Generated: 12/12/2011 4:06 PM

#### Average Passenger-Car Speed (mith) Free-Flow Speed FFS = 75 midt Application Input Output 70 mith 70 Operational (LOS) FFS, N, Vn LOS, S, D 60 midn Design (N) FFS, LOS, Vn N, S, D 60 55 midh v<sub>p</sub>, S, D Design (v<sub>o</sub>) FFS, LOS, N 50 Planning (LOS) FFS. N. AADT LOS, S, D Planning (M) FFS, LOS, AADT N, S, D 40 FFS, LOS, N Planning (v<sub>n</sub>) v<sub>o</sub>, S, D 30 00S1200 1600 2000 2400 Flow Rate (pc/h/lin) General Information Site Information Analyst Highway/Direction of Travel SEB Northbound I-87 Agency or Company CHA From/To Exit 5 to Exit 6 Date Performed Jurisdiction NYSDOT 6/22/2011 Analysis Time Period Analysis Year 2036 No-Build PM Project Description Exit 4 Oper.(LOS) Des.(N) ☐ Planning Data Flow Inputs Volume, V 6250 veh/h Peak-Hour Factor, PHF 0.86 AADT %Trucks and Buses, P<sub>⊤</sub> 2 veh/day %RVs, P<sub>R</sub> Peak-Hr Prop. of AADT, K 0 General Terrain: Peak-Hr Direction Prop, D Level $DDHV = AADT \times K \times D$ Grade % veh/h Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments $f_p$ 1.00 1.2 ER $E_{T}$ 1.5 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ 0.990 Speed Inputs Calc Speed Adj and FFS Lane Width 12.0 ft mi/h $f_{LW}$ Rt-Shoulder Lat. Clearance 6.0 ft $f_{LC}$ mi/h Interchange Density 0.50 I/mi $\mathsf{f}_\mathsf{ID}$ mi/h Number of Lanes, N 4 $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_{D} = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 1835 pc/h/ln $f_p)$ pc/h $f_p)$ 55.9 mi/h mi/h D = v<sub>n</sub> / S 32.8 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS D Required Number of Lanes, N Factor Location Glossary N - Number of lanes S - Speed f<sub>LW</sub> - Exhibit 23-4 E<sub>R</sub> - Exhibits23-8, 23-10 V - Hourly volume D - Density f<sub>IC</sub> - Exhibit 23-5 $E_{\tau}$ - Exhibits 23-8, 23-10, 23-11 v<sub>p</sub> - Flow rate FFS - Free-flow speed f<sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, v<sub>o</sub> - Exhibits 23-2, 23-3 f<sub>ID</sub> - Exhibit 23-7 DDHV - Directional design hour volume Copyright © 2010 University of Florida, All Rights Reserved HCS+TM Version 5.5 Generated: 12/12/2011 4:06 PM

#### **BASIC FREEWAY SEGMENTS WORKSHEET** Average Passenger-Car Speed (mi/h) Free-Flow Spred FFS = 75 mith **Application** Input Output 70 mish 70 Operational (LOS) FFS, N, v<sub>D</sub> LOS, S. D. 65 midt 60 midh FFS. LOS, v<sub>p</sub> Design (N) N, S, D 60 55 miih Design (v<sub>n</sub>) FFS, LOS, N Vp. S. D 50 LOS, S, D Planning (LOS) FFS, N, AADT Planning (M) FFS, LOS, AADT N, S, D 40 Planning (v<sub>n</sub>) FFS, LOS, N $V_p$ , $S_e$ D30 008 1600 1200 2000 2400 Flow Rate (pc/h/ln) General Information Site Information Analyst SEB Highway/Direction of Travel Southbound I-87 Agency or Company CHA From/To Exit 6 to Exit 5 Date Performed 6/22/2011 Jurisdiction NYSDOT Analysis Time Period Analysis Year 2036 No-Build PM Project Description Exit 4 Oper.(LOS) Des.(N) □ Planning Data Flow Inputs Volume, V 3800 veh/h Peak-Hour Factor, PHF 0.92 AADT veh/day %Trucks and Buses, P<sub>T</sub> 2 Peak-Hr Prop. of AADT, K %RVs, Pp 0 Peak-Hr Direction Prop. D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Calculate Flow Adjustments 1.00 $f_p$ ER 1.2 $E_{T}$ 1.5 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ 0.990 Speed Inputs Calc Speed Adj and FFS Lane Width ft 12.0 $f_{LW}$ mi/h Rt-Shoulder Lat. Clearance ft 6.0 $f_{LC}$ mi/h Interchange Density 0.50 I/mi $f_{ID}$ mi/h Number of Lanes, N 4 $f_N$ mi/h FFS (measured) 56.0 mi/h **FFS** 56.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 1043 pc/h/ln v<sub>n</sub> = (V or DDHV) / (PHF x N x f<sub>HV</sub> x $f_p)$ pc/h $f_p$ ) 56.0 mi/h mi/h $D = v_p / S$ 18.6 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS C Required Number of Lanes, N Glossary Factor Location N - Number of lanes S - Speed E<sub>R</sub> - Exhibits23-8, 23-10 f<sub>LW</sub> - Exhibit 23-4 - Hourly volume D - Density E<sub>T</sub> - Exhibits 23-8, 23-10, 23-11 f<sub>IC</sub> - Exhibit 23-5 - Flow rate FFS - Free-flow speed f<sub>p</sub> - Page 23-12 f<sub>N</sub> - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, $v_0$ - Exhibits 23-2, 23-3 f<sub>ID</sub> - Exhibit 23-7

DDHV - Directional design hour volume

|  | RAI                                     | MPS AND                                 | RAMP JUNG                | CTIONS W                     | ORKSHE  | ET               |                    |                                      |                                      |                                    |
|--|---|---|--------------------------|------------------------------|---|------------------|--------------------|--------------------------------------|--------------------------------------|------------------------------------|
| General Infor                                  |   |   |                          | Site Infor                   |   |                  |                    |                                      |                                      |                                    |
| Analyst<br>Agency or Company<br>Date Performed | SEB<br>CHA<br>9/08/                     |   | Jui<br>Jui               | eeway/Dir of Tranction       | ]<br>]  | Exit 2\<br>NYSD  |                    | ıp                                   |                                      |                                    |
| Analysis Time Period<br>Project Description    |   |   | An                       | alysis Year                  |   | 2036             | No-Build           |                                      |                                      |                                    |
| nputs  | EXIL 4                                  |   |                          |                              |   |                  |                    |                                      |                                      |                                    |
| Jpstream Adj Ramp                              |   | Terrain: Level                          |                          |                              |   |                  |                    |                                      | Downstrea                            | ım Adi                             |
| Yes Con  |   |   |                          |                              |   |                  |                    |                                      | Ramp                                 | -                                  |
| □ No    ○ Off                                  |   |   |                          |                              |   |                  |                    |                                      | ☐ Yes<br>☑ No                        | ☐ On<br>☐ Off                      |
|  |   |   |                          |                              |   |                  |                    |                                      |                                      |                                    |
| up = 1100 1                                    |   | S                                       | <sub>FF</sub> = 56.0 mph |                              | S <sub>FR</sub> = 4   | 0.0 m            | ph                 |                                      | L <sub>down</sub> = V <sub>D</sub> = | ft<br>veh/h                        |
| $v_{\rm u} = 860 \text{ v}$                    |   |   |                          | show lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$   |                  |                    |                                      | VD -                                 | VCII/II                            |
| Conversion to                                  | pc/h Und                                | der Base C                              | Conditions               |                              |   |                  |                    |                                      |                                      |                                    |
| (pc/h)   | V<br>(Veh/hr)                           | PHF                                     | Terrain                  | %Truck                       | %Rv   |                  | $f_{HV}$           | f <sub>p</sub>                       | v = V/PHF                            | x f <sub>HV</sub> x f <sub>p</sub> |
| reeway   | 4450                                    | 0.86                                    | Level                    | 2                            | 0   | 0                | .990               | 1.00                                 | 5                                    | 226                                |
| Ramp   | 740                                     | 0.92                                    | Level                    | 2                            | 0   | 0                | .990               | 1.00                                 |                                      | 312                                |
| JpStream                                       | 860                                     | 0.92                                    | Level                    | 2                            | 0   | 0                | .990               | 1.00                                 | ,                                    | 944                                |
| DownStream                                     |   | Merge Areas                             |                          |                              |   | <u> </u>         |                    | Diverge Area                         | 19                                   |                                    |
| Estimation of v <sub>12</sub>                  |   |   |                          |                              | Estimati  | on               | of v <sub>12</sub> | Diverge Area                         | 13                                   |                                    |
|  | V <sub>12</sub> = V <sub>F</sub>        | (P <sub>EM</sub> )                      |                          |                              | 1   |                  |                    | \/ · (\)/                            | \/ \D                                |                                    |
| EQ =   |   | • | 25-2 or 25-3)            |                              |   |                  | v <sub>12</sub> =  | : V <sub>R</sub> + (V <sub>F</sub> - |                                      | `                                  |
| r <sub>M</sub> =                               |   |   | on (Exhibit 25-5)        |                              | L <sub>EQ</sub> =   |                  |                    |                                      | 25-8 or 25-9                         |                                    |
| 12 =   | 3056                                    |   | (=                       |                              | P <sub>FD</sub> =   |                  |                    |                                      | ation (Exhibit :                     | 23-12)                             |
|  |   |   | n 25-4 or 25-            |                              | V <sub>12</sub> =   |                  |                    | pc/h                                 | n 25 15 ar 25                        | 1/\                                |
| or V <sub>av34</sub>                           | 5)                                      |   |                          |                              | $V_3$ or $V_{av34}$ pc/h (Equation 25-15 or 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No |                  |                    |                                      |                                      |                                    |
| s $V_3$ or $V_{av34} > 2,70$                   |   |   |                          |                              |   |                  |                    |                                      |                                      |                                    |
| s $V_3$ or $V_{av34} > 1.5$ *                  | ·=                                      |   |                          |                              | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No<br>If Yes, $V_{12a} =$ pc/h (Equation 25-18)       |                  |                    |                                      |                                      |                                    |
| Yes,V <sub>12a</sub> =                         | •                                       | (Equation 25                            | -8)                      |                              |   |                  |                    | pc/II (⊑qua                          | 111011 25-16)                        |                                    |
| Capacity Che                                   |   |   |                          |                              | Capacity  | y Cł             |                    |                                      |                                      |                                    |
|  | Actual                                  | Ca                                      | apacity                  | LOS F?                       |   |                  | Actua              |                                      | Capacity                             | LOS F                              |
|  |   |   |                          |                              | V <sub>F</sub>  |                  |                    | Exhibit 2                            |                                      | 4                                  |
| $V_{FO}$                                       | 6038                                    | Exhibit 25-7                            |                          | No                           | $V_{FO} = V_{F}$  | - V <sub>R</sub> |                    | Exhibit 2                            | 5-14                                 |                                    |
|  |   |   |                          |                              | $V_R$   |                  |                    | Exhibit 2                            | 25-3                                 |                                    |
| Flow Entering                                  |   |   |                          |                              | Flow En   | -                |                    |                                      | ence Are                             |                                    |
|  | Actual                                  | T                                       | Desirable                | Violation?                   | ļ.,.  | _                | Actual             | Max De                               | 7                                    | Violation?                         |
| V <sub>R12</sub>                               | 3868                                    | Exhibit 25-7                            | 4600:AII                 | No                           | V <sub>12</sub>   |                  |                    | Exhibit 25-14                        |                                      | . =\                               |
| evel of Serv                                   |   |   |                          |                              |   |                  |                    |                                      | tion (if no                          | t F)                               |
| ••   | • | 0.0078 V <sub>12</sub> - 0.0            | 0627 L <sub>A</sub>      |                              |   |                  |                    | 0.0086 V <sub>12</sub>               | - 0.009 L <sub>D</sub>               |                                    |
| O <sub>R</sub> = 29.9 (pc                      | •                                       |   |                          |                              |   | c/mi/            | ,                  |                                      |                                      |                                    |
| OS = D (Exhib                                  |   |   |                          |                              |   |                  | it 25-4)           |                                      |                                      |                                    |
| Speed Detern                                   | nination                                |   |                          |                              | Speed D   |                  |                    | ion                                  |                                      |                                    |
| 1 <sub>S</sub> = 0.440 (Exit                   | oit 25-19)                              |   |                          |                              | 3   |                  | 25-19)             |                                      |                                      |                                    |
| =  | (Exhibit 25-19)                         |   |                          |                              | S <sub>R</sub> = mr   | oh (Ex           | hibit 25-19        | ))                                   |                                      |                                    |
|  | (Exhibit 25-19)                         |   |                          |                              | S <sub>0</sub> = mph (Exhibit 25-19)  |                  |                    |                                      |                                      |                                    |
|  | (Exhibit 25-14)                         |   |                          |                              | S = mp  | oh (Ex           | chibit 25-15       | 5)                                   |                                      |                                    |
| ppyright © 2007 Unive                          | ersity of Florida, A                    | All Rights Reserv                       | ed                       |                              | HCS+ <sup>™</sup> \   | /ersio           | n 5.3              |                                      | Generated: 12/                       | 16/2011 8:5                        |
|  |   |   |                          |                              |   |                  |                    |                                      |                                      |                                    |

|   |                         | NAMI                     | S AND RAM  |   |   | ,,,,,,           | /I I L L I                             |                             |                     |                                    |
|---|-------------------------|--------------------------|--|---|---|------------------|--|-----------------------------|---------------------|------------------------------------|
| General Info  | rmation                 |                          |  | Site Infor  |   |                  |  |                             |                     |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 9/08/<br>d PM           |                          | Ju<br>Ju   | eeway/Dir of Tr<br>nction<br>risdiction<br>nalysis Year |   | Exit 4<br>NYSD   | oound I-87<br>NB Off<br>OT<br>No-Build |                             |                     |                                    |
| Project Description   | Exit 4                  |                          |  |   |   |                  |  |                             |                     |                                    |
| Inputs  |                         | <u> </u>                 |  |   |   |                  |  |                             |                     |                                    |
| Upstream Adj Ramp   |                         | Terrain: Level           |  |   |   |                  |  |                             | Downstrea<br>Ramp   | m Adj                              |
| Tyes To   |                         |                          |  |   |   |                  |  |                             | ✓ Yes               | ✓ On                               |
| ✓ No ☐ Of   | Π                       |                          |  |   |   |                  |  |                             | □ No                | ☐ Off                              |
| L <sub>up</sub> = ft  |                         | S                        | <sub>FF</sub> = 56.0 mph   |   | S <sub>FR</sub> = ·   | 40.0 m           | ph                                     |                             | L <sub>down</sub> = | 2660 ft                            |
| V <sub>u</sub> = veh/ł  |                         |                          | Sketch ( show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>I</sub> ) |   |   |                  |  |                             | V <sub>D</sub> =    | 1500 veh/                          |
| Conversion t  | 7                       | der Base (               | Conditions   |   |   |                  |  |                             |                     |                                    |
| (pc/h)  | V<br>(Veh/hr)           | PHF                      | Terrain  | %Truck  | %Rv   |                  | $f_{HV}$                               | f <sub>p</sub>              | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 5200                    | 0.86                     | Level  | 2   | 0   | 0                | .990                                   | 1.00                        | 610                 | 07                                 |
| Ramp  | 630                     | 0.86                     | Level  | 2   | 0   |                  | .990                                   | 1.00                        | 74                  | 0                                  |
| UpStream  | 4500                    | 0.00                     | 1 1  | 1   |   | +                |  | 1.00                        | 47                  | 10                                 |
| DownStream  | 1500                    | 0.88<br>Merge Areas      | Level  | 1   | 0   |                  | .995                                   | 1.00<br>Diverge Areas       | 17                  | 13                                 |
| Estimation o  |                         | ivier ge Areas           |  |   | Estimat   | tion (           |  | Diverge Areas               |                     |                                    |
|   |                         | (D )                     |  |   |   |                  |  | \/ . (\/ \/                 | \D                  |                                    |
|   | $V_{12} = V_F$          |                          | 05.0)  |   |   |                  |  | $= V_R + (V_F - V_I)$       |                     |                                    |
| L <sub>EQ</sub> =   |                         | ation 25-2 or            |  |   | L <sub>EQ</sub> =   |                  |  | Equation 25-8               |                     |                                    |
| P <sub>FM</sub> =   | _                       | Equation (E              | xhibit 25-5)   |   | P <sub>FD</sub> =   |                  |  | .573 using Ed               | juation (Exh        | ibit 25-12)                        |
| V <sub>12</sub> =   | pc/h                    |                          |  |   | V <sub>12</sub> =   |                  |  | 817 pc/h                    |                     |                                    |
| V <sub>3</sub> or V <sub>av34</sub>                                   |                         | (Equation 25             | -4 or 25-5)  |   | V <sub>3</sub> or V <sub>av34</sub>                                       |                  |  | 290 pc/h (Equ               | ation 25-15         | or 25-16)                          |
| Is $V_3$ or $V_{av34} > 2,70$   |                         |                          |  |   |   |                  |  | Yes Mo                      |                     |                                    |
| Is $V_3$ or $V_{av34} > 1.5$  |                         |                          |  |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                            |                  |  |                             |                     |                                    |
| If Yes,V <sub>12a</sub> =   |                         | (Equation 25             | -8)  |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)                           |                  |  |                             |                     |                                    |
| Capacity Che  | 1                       |                          |  |   | Capacit   | ty Ch            | 1                                      |                             |                     |                                    |
|   | Actual                  | Ca                       | apacity  | LOS F?  | ļ .,  |                  | Actual                                 |                             | pacity              | LOS F?                             |
|   |                         |                          |  |   | V <sub>F</sub>  |                  | 6107                                   | Exhibit 25-1                |                     | No                                 |
| V <sub>FO</sub>   |                         | Exhibit 25-7             |  |   | $V_{FO} = V_{F}$  | - V <sub>R</sub> | 5367                                   | Exhibit 25-1                | 4 6780              | No                                 |
|   |                         |                          |  |   | V <sub>R</sub>  |                  | 740                                    | Exhibit 25-3                | 2100                | No                                 |
| Flow Enterin  | g Merge In              | fluence A                | rea  |   | Flow Er   | nterii           | ng Dive                                | rge Influen                 | ce Area             |                                    |
|   | Actual                  | Max I                    | Desirable  | Violation?  |   |                  | Actual                                 | Max Desirat                 | ole                 | Violation?                         |
| V <sub>R12</sub>  |                         | Exhibit 25-7             |  |   | V <sub>12</sub>   |                  | 3817                                   | Exhibit 25-14               | 4400:All            | No                                 |
| Level of Serv   | vice Detern             | nination (i              | f not F)   |   | Level o   | f Ser            | vice De                                | eterminatio                 | n (if not l         | F)                                 |
| $D_R = 5.475 + 0$   | .00734 v <sub>R</sub> + | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |   |   | $D_R =$          | 4.252 + 0                              | ).0086 V <sub>12</sub> - 0. | 009 L <sub>D</sub>  |                                    |
| D <sub>R</sub> = (pc/mi   | /ln)                    |                          |  |   | $D_R = 3$   | 3.9 (pd          | c/mi/ln)                               |                             |                     |                                    |
| LOS = (Exhib  | it 25-4)                |                          |  |   | LOS = D   | (Exh             | ibit 25-4)                             |                             |                     |                                    |
| Speed Deteri  | mination                |                          |  |   | Speed I   | Dete             | rminati                                | on                          |                     |                                    |
| $M_S = (Exibit 2)$  |                         |                          |  |   | $D_s = 0$   | .430 <b>(E</b>   | xhibit 25                              | -19)                        |                     |                                    |
| ľ   | nibit 25-19)            |                          |  |   |   | 0.0 mp           | h (Exhibit                             | 25-19)                      |                     |                                    |
|   | nibit 25-19)            |                          |  |   |   | -                |  |                             |                     |                                    |
|   |                         |                          |  |   | S <sub>0</sub> = 56.4 mph (Exhibit 25-19)<br>S = 52.2 mph (Exhibit 25-15) |                  |  |                             |                     |                                    |
| S = mph (Exhibit 25-14)   |                         |                          |  |   |   |                  |  |                             |                     |                                    |

|   |                                    | MPS AND                                 | RAMP JUNG   |   |                                       | <u> </u>                                    |                    |                          |                                 |                                      |
|---|------------------------------------|---|---|---|---------------------------------------|---|--------------------|--------------------------|---------------------------------|--------------------------------------|
| General Info  | rmation                            |   |   | Site Infor  | mation                                |   |                    |                          |                                 |                                      |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 9/08/                              |   | Jui<br>Jui  | eeway/Dir of Tr<br>nction<br>isdiction<br>alysis Year |                                       | Northbou<br>Exit 4 NB<br>NYSDOT<br>2036 No- | On-Ra              | mp                       |                                 |                                      |
| Project Description   | Exit 4                             |   |   | •   |                                       |   |                    |                          |                                 |                                      |
| nputs   |                                    |   |   |   |                                       |   |                    |                          |                                 |                                      |
| Jpstream Adj Ramp<br>—  |                                    | Terrain: Level                          |   |   |                                       |   |                    |                          | Downstre<br>Ramp                | am Adj                               |
| □ Yes □ O   |                                    |   |   |   |                                       |   |                    |                          | ✓ Yes                           | ☐ On                                 |
| ™ No  □ O   | ff                                 |   |   |   |                                       |   |                    |                          | □ No                            | ✓ Off                                |
| - <sub>up</sub> = ft  |                                    |   |   |   |                                       |   |                    |                          | L <sub>down</sub> =             | 3500 ft                              |
| / <sub>u</sub> = veh/   | h                                  | S                                       | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$<br>Sketch ( show lanes, $L_{A'} L_{D'} V_{R'} V_{f'}$ ) |   |                                       |   |                    |                          | V <sub>D</sub> =                | 470 veh/h                            |
| Conversion  | to pc/h Und                        | der Base C                              | Conditions  |   |                                       |   |                    |                          |                                 |                                      |
| (pc/h)  | V<br>(Veh/hr)                      | PHF                                     | Terrain   | %Truck  | %Rv                                   | f <sub>H</sub>                              | IV                 | f <sub>p</sub>           | v = V/PH                        | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 4600                               | 0.86                                    | Level   | 2   | 0                                     | 0.99  | 0                  | 1.00                     |                                 | 5402                                 |
| Ramp  | 1500                               | 0.88                                    | Level   | 1   | 0                                     | 0.99  | 5                  | 1.00                     |                                 | 1713                                 |
| UpStream  | 1                                  |   |   |   |                                       | -   |                    |                          |                                 |                                      |
| DownStream  | 470                                | 0.92                                    | Level   | 3   | 0                                     | 0.98  |                    | 1.00                     |                                 | 519                                  |
| Estimation o  |                                    | Merge Areas                             |   |   | Estimati                              | ion of                                      |                    | Diverge Areas            | 5                               |                                      |
|   |                                    | <b>'</b> 5 \                            |   |   | LStillati                             | 011 01                                      | 12                 |                          |                                 |                                      |
|   | $V_{12} = V_F$                     | • |   |   |                                       |   | V <sub>12</sub> =  | $V_R + (V_F - V_F)$      | / <sub>R</sub> )P <sub>FD</sub> |                                      |
| -EQ =   | 2520.64 (Equation 25-2 or 25-3)    |   |   |   |                                       |   |                    | (Equation 2              | 5-8 or 25-                      | 9)                                   |
| P <sub>FM</sub> =   | 0.603                              | using Equati                            | on (Exhibit 25-5)   |   | P <sub>FD</sub> =                     |   |                    | using Equat              | tion (Exhibit                   | 25-12)                               |
| / <sub>12</sub> =   | 3256                               |   |   |   | V <sub>12</sub> =                     |   |                    | pc/h                     |                                 |                                      |
| <sub>3</sub> or V <sub>av34</sub>                                     | 2146 <sub> </sub><br>5)            | pc/h (Equatio                           | n 25-4 or 25-   |   | V <sub>3</sub> or V <sub>av34</sub>   |   |                    | pc/h (Equation           | n 25-15 or 25                   | 5-16)                                |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                          | ,                                  | s 🔽 No                                  |   |   | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>34</sub> > 2,700                       | ) pc/h?            | □ Yes □ N                | О                               |                                      |
| ls V <sub>3</sub> or V <sub>av34</sub> > 1.5                          |                                    |   |   |   | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>34</sub> > 1.5 *                       | V <sub>12</sub> /2 | □ Yes □ N                | 0                               |                                      |
| f Yes,V <sub>12a</sub> =  |                                    | (Equation 25                            | -8)   |   | If Yes, V <sub>12a</sub> =            |   |                    | pc/h (Equat              | ion 25-18)                      |                                      |
| Capacity Ch   |                                    | (Equation Eo                            | <u> </u>  |   | Capacit                               | v Che                                       | cks                |                          |                                 |                                      |
| supuoity Oik  | Actual                             | Ca                                      | npacity   | LOS F?  | Joapaon                               | 1   | Actual             |                          | apacity                         | LOS F                                |
|   |                                    | Ī                                       |   |   | V <sub>F</sub>                        |   |                    | Exhibit 25               |                                 |                                      |
| $V_{FO}$  | 7115                               | Exhibit 25-7                            |   | Yes   | $V_{FO} = V_{F}$                      | - V_  |                    | Exhibit 25               | _                               | _                                    |
| * FO  | 7113                               | EXHIBIT 25-7                            |   | 103   |                                       | *R  |                    | Exhibit 25               |                                 | -                                    |
| Tlave Fratarin  | a Maras In                         | fluores A                               |   | <u> </u>  | V <sub>R</sub>                        | 4   | . Di               |                          |                                 |                                      |
| Flow Enterin  | Actual                             |   | r <b>ea</b><br>Desirable  | Violation?  | FIOW En                               | Act   |                    | erge Influe<br>Max Des   |                                 | Violation?                           |
| V <sub>R12</sub>  | 4969                               | Exhibit 25-7                            | 4600:All  | Yes   | V <sub>12</sub>                       | ACI   | uai                | Exhibit 25-14            | an anic                         | violations                           |
| Level of Serv   |                                    |   |   | 163   |                                       | Servi                                       | ica D              | eterminati               | ion (if n                       | )                                    |
|   | + 0.00734 v <sub>R</sub> + 0       |   |   |   |                                       |   |                    | 0.0086 V <sub>12</sub> - | <u> </u>                        | <i>,</i> (1)                         |
|   | c/mi/ln)                           | 12 0.0                                  | A   |   |                                       | c/mi/ln)                                    |                    | 12                       | 5.505 LD                        |                                      |
| IX 4  | bit 25-4)                          |   |   |   |                                       | xhibit 2                                    |                    |                          |                                 |                                      |
|   |                                    |   |   |   | <u> </u>                              |   |                    | On.                      |                                 |                                      |
| Speed Deter   |                                    |   |   |   | Speed E                               |   |                    | UII                      |                                 |                                      |
| 3   | ribit 25-19)                       |   |   |   | 3                                     | xhibit 25                                   | -                  | ١                        |                                 |                                      |
|   | (Exhibit 25-19)                    |   |   |   | L''                                   | ph (Exhib                                   |                    |                          |                                 |                                      |
|   | (F., L!L!L OF 10)                  |   |   |   | $S_0 = m_1$                           | ph (Exhib                                   | or 25-19           | )                        |                                 |                                      |
|   | (Exhibit 25-19)<br>(Exhibit 25-14) |   |   |   | I *                                   | oh (Exhib                                   |                    |                          |                                 |                                      |

|  |   | RAMPS              | AND RAM                                 | P JUNCTI   | ONS WO  | RKSH                                     | IEET                   |  |                               |                                    |
|--|---|--------------------|---|--|---|--|------------------------|--|-------------------------------|------------------------------------|
| General Infor  | mation  |                    | , | Site Infor   |   |  |                        |  |                               |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | SEB<br>CHA<br>9/08/<br>I PM   |                    | Ju<br>Ju                                | reeway/Dir of Tranction<br>urisdiction<br>nalysis Year | avel r<br>E   | Northbo<br>Exit 5 NI<br>NYSDO<br>2036 No | Т                      |  |                               |                                    |
| Project Description<br>Inputs  | EXIT 4  |                    |   |  |   |  |                        |  |                               |                                    |
| _  |   | Terrain: Level     |   |  |   |  |                        |  | Downstrea                     | m Adi                              |
| Upstream Adj Ramp<br>—   |   |                    |   |  |   |  |                        |  | Ramp                          | iii Auj                            |
| ✓ Yes ✓ Or   | 1   |                    |   |  |   |  |                        |  | □ Yes                         | □ On                               |
| □ No □ Of  | f   |                    |   |  |   |  |                        |  | ✓ No                          | ☐ Off                              |
| 3500   | £.  |                    |   |  |   |  |                        |  |                               | ft                                 |
| L <sub>up</sub> = 3500   | π   | S                  | <sub>FF</sub> = 56.0 mph                |  | S <sub>FR</sub> = 3   | 5.0 mph                                  | 1                      |  | L <sub>down</sub> =           |                                    |
| V <sub>u</sub> = 1500 ·  | /eh/h   |                    | •                                       | show lanes, L <sub>A</sub> ,                           |   | o.op.                                    | •                      |  | $V_D =$                       | veh/h                              |
| Conversion t   | o pc/h Und  | der Base C         |   | ^  | D K I   |  |                        |  |                               |                                    |
| (pc/h)   | V   | PHF                | Terrain                                 | %Truck   | %Rv   | f  | HV                     | f <sub>p</sub>                         | v = V/PHF                     | x f <sub>uv</sub> x f <sub>n</sub> |
| Freeway  | (Veh/hr)<br>6050  | 0.86               | Level                                   | 2  | 0   | 0.9                                      |                        | 1.00                                   | 710                           | г                                  |
| Ramp   | 470   | 0.80               | Level                                   | 3  | 0   | 0.9                                      |                        | 1.00                                   | 51                            |                                    |
| UpStream   | 1500  | 0.88               | Level                                   | 1  | 0   | 0.9                                      |                        | 1.00                                   | 17                            |                                    |
| DownStream   |   |                    |   |  |   |  |                        |  |                               |                                    |
| Merge Areas  |   |                    |   |  | <br> = .: .:  |  |                        | Diverge Areas                          |                               |                                    |
| Estimation of  | 12 12   |                    |   |  | Estimati  | on of                                    | 12 12                  |  |                               |                                    |
|  | $V_{12} = V_F$  | (P <sub>FM</sub> ) |   |  |   |  | V <sub>12</sub> =      | = V <sub>R</sub> + (V <sub>F</sub> - V | <sub>R</sub> )P <sub>FD</sub> |                                    |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                              |   |                    |   | L <sub>EQ</sub> =                                      |   | 8  | 785.92 (Equat          | ion 25-8 or                            | 25-9)                         |                                    |
| P <sub>FM</sub> =  | using   | Equation (E        | xhibit 25-5)                            |  | P <sub>FD</sub> =   |  | 0                      | .736 using Ed                          | <b>juation</b> (Exhi          | bit 25-12)                         |
| V <sub>12</sub> =  | pc/h  |                    |   |  | V <sub>12</sub> =   |  | 5                      | 363 <b>pc/h</b>                        |                               |                                    |
| V <sub>3</sub> or V <sub>av34</sub>                                    |   | (Equation 25       | -4 or 25-5)                             |  | $V_3$ or $V_{av34}$   |  |                        | 742 pc/h (Equ                          | ation 25-15                   | or 25-16)                          |
| Is $V_3$ or $V_{av34} > 2,70$  |   |                    |   |  |   |  |                        | Yes Mo                                 |                               |                                    |
| Is $V_3$ or $V_{av34} > 1.5$   | · <del>-</del>  |                    |   |  |   |  |                        | Yes ☑ No                               |                               |                                    |
| If Yes,V <sub>12a</sub> =  |   | (Equation 25-      | -8)                                     |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)                                     |  |                        |  |                               |                                    |
| Capacity Che   |   |                    | 9                                       | 1.00.50  | Capacity  | / Che                                    |                        |  | 11                            | Liocie                             |
|  | Actual  | La Ca              | pacity                                  | LOS F?   | \/  | $\dashv$                                 | Actual                 | Exhibit 25-1                           | pacity                        | LOS F?                             |
| V  |   | F.,L;L;L;2 OF 7    |   |  | V <sub>F</sub>  | \ <u>\</u>                               | 7105                   | _                                      | _                             | Yes                                |
| $V_{FO}$   |   | Exhibit 25-7       |   |  | $V_{FO} = V_{F}$  | - v <sub>R</sub>                         | 6586                   | Exhibit 25-1                           | _                             | No                                 |
| <u></u>  |   |                    |   | <u> </u>   | V <sub>R</sub>  |  | 519                    | Exhibit 25-3                           |                               | No                                 |
| Flow Entering  | g Merge In<br>Actual  | 1                  | <b>rea</b><br>Desirable                 | Violation?   | Flow En   |  | <b>g Dive</b><br>ctual | rge Influen  Max Desiral               |                               | Violation?                         |
| V <sub>R12</sub>   | Actual  | Exhibit 25-7       | Jesilable                               | Violations   | V <sub>12</sub>   | _  | 363                    | Exhibit 25-14                          | 4400:All                      | Yes                                |
| Level of Serv  | ice Detern  |                    | f not F)                                |  | <del>}</del>  |  |                        | terminatio                             | l                             |                                    |
| $D_R = 5.475 + 0.00$   |   | •                  |   |  |   |  |                        | 0.0086 V <sub>12</sub> - 0.            |                               | ,                                  |
| D <sub>R</sub> = (pc/mi/   | •••   | 12                 |   |  |   | .1 (pc/i                                 |                        | 12                                     | ооо -Б                        |                                    |
| LOS = (Exhib   | ,   |                    |   |  | I   |  | it 25-4)               |  |                               |                                    |
| Speed Deterr   |   |                    |   |  | Speed D   | `  |                        | on                                     |                               |                                    |
| _  |   |                    |   |  |   |  |                        |  |                               |                                    |
| M <sub>S</sub> = (Exibit 2<br>S = mnh (Exh                             |   |                    |   |  | D <sub>s</sub> = 0.475 (Exhibit 25-19)<br>S <sub>R</sub> = 49.4 mph (Exhibit 25-19) |  |                        |  |                               |                                    |
| $S_R$ mph (Exhibit 25-19)<br>$S_0$ mph (Exhibit 25-19)                 |   |                    |   |  | $S_0$ = 58.5 mph (Exhibit 25-19)  |  |                        |  |                               |                                    |
| Lo_ mhu (⊏xi   | S = mph (Exhibit 25-14)   |                    |   |  | S = 51.3 mph (Exhibit 25-15)  |  |                        |  |                               |                                    |
| S = mnh (Fxh   | S = mpn (Exhibit 25-14) Copyright © 2007 University of Florida, All Rights Reserved |                    |   |  | S = 51  | 3 mnh                                    | (Exhihit               | 25-15)                                 |                               |                                    |

|   |                                  | RAMP                          | S AND RAI                               | /IP JUNCTI   | ONS WO   | RKS                                  | HEET                   |   |                     |   |
|---|----------------------------------|-------------------------------|---|--|--|--------------------------------------|------------------------|---|---------------------|---|
| General Info  | rmation                          |                               |   | Site Infor   |  |                                      |                        |   |                     |   |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | SEB<br>/ CHA<br>9/08/<br>d PM    |                               | J                                       | Freeway/Dir of Tr<br>lunction<br>lurisdiction<br>Analysis Year | avel S   | Southb<br>Exit 2V<br>NYSD(<br>2036 N | V Off                  |   |                     |   |
| Project Description   | Exit 4                           |                               |   |  |  |                                      |                        |   |                     |   |
| Inputs  |                                  | Terrain: Leve                 | I                                       |  |  |                                      |                        |   | Downstrea           | m Adi   |
| Upstream Adj Ramp   |                                  |                               |   |  |  |                                      |                        |   | Ramp                |   |
| M No □ O  |                                  |                               |   |  |  |                                      |                        |   | ✓ Yes               | ☑ On  |
| 140   | "                                |                               |   |  |  |                                      |                        |   | □ No                | ☐ Off   |
| L <sub>up</sub> = ft  |                                  |                               | E4.0 mnh                                |  | <u> </u>   | 0.0                                  | . h                    |   | L <sub>down</sub> = | 1300 ft                                       |
| V <sub>u</sub> = veh/l  | h                                | 3                             | $_{FF}$ = 56.0 mph Sketch (             | ( show lanes, L <sub>A</sub> ,                                 | $S_{FR} = 40$ $L_{D'}V_{R'}V_{f}$                                | u.u mp                               | OTI                    |   | V <sub>D</sub> =    | 910 veh/h                                     |
| Conversion t  | to pc/h Und                      | der Base (                    | Conditions                              |  |  |                                      |                        |   |                     |   |
| (pc/h)  | V<br>(Veh/hr)                    | PHF                           | Terrain                                 | %Truck   | %Rv  |                                      | f <sub>HV</sub>        | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub>            |
| Freeway   | 4100                             | 0.92                          | Level                                   | 2  | 0  | 0                                    | .990                   | 1.00  | 45                  | 01  |
| Ramp  | 650                              | 0.92                          | Level                                   | 2  | 0  | 0                                    | .990                   | 1.00  | 7                   | 14  |
| UpStream<br>DownStream  | 910                              | 0.92                          | Lovel                                   | 2  | 0  |                                      | .990                   | 1.00  | 00                  | 99  |
| Downstieam  |                                  | Merge Areas                   | Level                                   |  | 0  | 0                                    |                        | Diverge Areas                                       | 9.                  | 79  |
| Estimation of v <sub>12</sub>   |                                  |                               |   |  | Estimati   | on c                                 |                        | 2.1.o. go 7.1. oao                                  |                     |   |
|   | V <sub>12</sub> = V <sub>F</sub> | (P.,,)                        |   |  | 1  |                                      |                        | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | )P-5                |   |
| L <sub>EQ</sub> =   | 12 1                             | ation 25-2 or                 | 25-3)                                   |  | L <sub>FO</sub> =  |                                      |                        | Equation 25-8                                       |                     |   |
| P <sub>FM</sub> =   |                                  | using Equation (Exhibit 25-5) |   |  |  |                                      |                        | .615 using Eq                                       |                     | nibit 25-12)                                  |
| V <sub>12</sub> =   | pc/h                             | ,                             | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |  | P <sub>FD</sub> =<br>V <sub>12</sub> =                           |                                      |                        | 042 pc/h  | ua (=               |   |
| V <sub>3</sub> or V <sub>av34</sub>                                   | •                                | (Equation 25                  | 5-4 or 25-5)                            |  | V <sub>3</sub> or V <sub>av34</sub>                              |                                      |                        | 459 pc/h (Equ                                       | ation 25-1          | 5 or 25-16                                    |
| Is $V_3$ or $V_{av34} > 2.79$   |                                  |                               |   |  |  | 4 > 2,7                              |                        | Tyes ☑ No   |                     |   |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                          | * V <sub>12</sub> /2             | s 🗆 No                        |   |  | Is V <sub>3</sub> or V <sub>av3</sub>                            | ·<br><sub>4</sub> > 1.5              | 5 * V <sub>12</sub> /2 | Tyes  ✓ No  |                     |   |
| If Yes,V <sub>12a</sub> =   | pc/h                             | (Equation 25                  | 5-8)                                    |  | If Yes,V <sub>12a</sub> =  |                                      | ŗ                      | oc/h (Equation                                      | 25-18)              |   |
| Capacity Che  | ecks                             |                               |   |  | Capacity   | / Ch                                 | ecks                   |   |                     |   |
|   | Actual                           | С                             | apacity                                 | LOS F?   |  |                                      | Actual                 | Ca  | pacity              | LOS F   |
|   |                                  |                               |   |  | V <sub>F</sub>   |                                      | 4501                   | Exhibit 25-1  | 4 6780              | No  |
| $V_{FO}$  |                                  | Exhibit 25-7                  |   |  | $V_{FO} = V_{F}$   | - V <sub>R</sub>                     | 3787                   | Exhibit 25-1  | 4 6780              | No  |
|   |                                  |                               |   |  | V <sub>R</sub>   |                                      | 714                    | Exhibit 25-3  | 2100                | No  |
| Flow Enterin  | 7                                | ır                            |   |  | Flow En  | 1                                    |                        | rge Influen   |                     |   |
| \ / I   | Actual                           |                               | Desirable                               | Violation?   | .,   | 1                                    | Actual                 | Max Desirab   |                     | Violation                                     |
| V <sub>R12</sub>  | ioo Data                         | Exhibit 25-7                  | if not T                                | 1  | V <sub>12</sub>  |                                      | 3042                   | Exhibit 25-14                                       | 4400:All            | No  |
| Level of Serv   |                                  | •                             |   |  |  |                                      |                        | terminatio  | -                   | <u>r)                                    </u> |
| $D_{R} = 5.475 + 0$   | • •                              | 0.0076 V <sub>12</sub> -      | 0.00021 L <sub>A</sub>                  |  |  |                                      |                        | 0.0086 V <sub>12</sub> - 0.                         | ooa r <sup>D</sup>  |   |
| $D_R = (pc/mi)$<br>LOS = (Exhib                                       | /in)<br>oit 25-4)                |                               |   |  | 1  |                                      | /mi/ln)                |   |                     |   |
| ,   |                                  |                               |   |  |  | `                                    | bit 25-4)              | <u> </u>  |                     |   |
| Speed Determ  |                                  |                               |   |  | Speed D  |                                      |                        |   |                     |   |
| M <sub>S</sub> = (Exibit 2  |                                  |                               |   |  |  | •                                    | xhibit 25              | •   |                     |   |
| S <sub>R</sub> = mph (Exhibit 25-19)                                  |                                  |                               |   | S <sub>R</sub> = 50.0 mph (Exhibit 25-19)                      |  |                                      |                        |   |                     |   |
|   |                                  |                               |   |  | $S_0$ = 59.6 mph (Exhibit 25-19)<br>S = 52.8 mph (Exhibit 25-15) |                                      |                        |   |                     |   |
| S <sub>0</sub> = mph (Exi   | •                                |                               |   |  |  |                                      |                        |   |                     |   |

|   |                                  | RAMP                          | S AND RAM                | IP JUNCTI   | ONS WO                                 | RKS  | HEET                                   |   |   |                           |
|---|----------------------------------|-------------------------------|--------------------------|---|--|--|--|---|---|---------------------------|
| General Info  | rmation                          |                               |                          | Site Infor  |  |  |  |   |   |                           |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | SEB<br>/ CHA<br>9/08/<br>d PM    |                               | J                        | reeway/Dir of Tr<br>unction<br>urisdiction<br>analysis Year | ravel s                                | Exit 4 S<br>NYSD(  | oound I-87<br>SB Off<br>OT<br>Io-Build |   |   |                           |
| Project Description Inputs  | EXIL 4                           |                               |                          |   |  |  |  |   |   |                           |
| Upstream Adj Ramp   | `                                | Terrain: Leve                 | I                        |   |  |  |  |   | Downstrea                               | ım Adi                    |
| ☐ Yes ☐ O   |                                  |                               |                          |   |  |  |  |   | Ramp                                    |                           |
| M No □ O  | ff                               |                               |                          |   |  |  |  |   | ✓ Yes                                   | ☑ On<br>☐ Off             |
|   |                                  |                               |                          |   |  |  |  |   |   |                           |
| L <sub>up</sub> = ft  | _                                | S                             | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4                    | 0.0 mp   | oh                                     |   | L <sub>down</sub> =<br>V <sub>D</sub> = | 3100 ft<br>470 veh/h      |
| V <sub>u</sub> = veh/l  |                                  |                               |                          | show lanes, L <sub>A</sub>                                  | $L_{D'}V_{R'}V_{f}$                    |  |  |   | , D _                                   | 4/0 VEII/I                |
| Conversion t  |                                  | der Base (                    | Conditions               |   |  |  |  |   |   |                           |
| (pc/h)  | V<br>(Veh/hr)                    | PHF                           | Terrain                  | %Truck  | %Rv                                    |  | $f_{HV}$                               | f <sub>p</sub>                                      | v = V/PHF                               | $x \: f_{HV} \: x \: f_p$ |
| Freeway   | 3100                             | 0.92                          | Level                    | 2   | 0                                      | 0  | .990                                   | 1.00  | 34                                      | 03                        |
| Ramp  | 600                              | 0.92                          | Level                    | 2   | 0                                      | 0  | .990                                   | 1.00  | 6                                       | 59                        |
| UpStream<br>DownStream  | 470                              | 0.07                          | Laval                    | 1   |  | +  | 005                                    | 1.00  |   | 42                        |
| Downstieam  | 470                              | 0.87<br>Merge Areas           | Level                    | 1   | 0                                      | 0  | .995                                   | 1.00<br>Diverge Areas                               | 54                                      | 43                        |
| Estimation of v <sub>12</sub>   |                                  |                               |                          |   | Estimati                               | on c   |  | Divorgo 7 il odo                                    |   |                           |
|   | V <sub>12</sub> = V <sub>F</sub> | (P)                           |                          |   | †                                      |  |  | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> |   |                           |
| L <sub>EQ</sub> =   | 12 1                             | ation 25-2 or                 | 25-3)                    |   | L <sub>FO</sub> =                      |  |  | Equation 25-8                                       | `                                       |                           |
| P <sub>FM</sub> =   |                                  | using Equation (Exhibit 25-5) |                          |   |  |  |  | .645 using Eq                                       |   | nibit 25-12)              |
| V <sub>12</sub> =   | pc/h                             | ,                             | ,                        |   | P <sub>FD</sub> =<br>V <sub>12</sub> = |  |  | 428 pc/h  | ua.io.i (= /i.                          |                           |
| V <sub>3</sub> or V <sub>av34</sub>                                   | pc/h                             | (Equation 25                  | 5-4 or 25-5)             |   | V <sub>3</sub> or V <sub>av34</sub>    |  |  | 75  pc/h (Equa                                      | ition 25-15                             | or 25-16)                 |
| Is $V_3$ or $V_{av34} > 2.79$   |                                  |                               |                          |   |  | <sub>4</sub> > 2,7   |  | T Yes ▼ No  |   | ,                         |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                          | * V <sub>12</sub> /2             | s 🗆 No                        |                          |   | Is V <sub>3</sub> or V <sub>av3</sub>  | 1.5<br>1.5   | 5 * V <sub>12</sub> /2                 | Tyes  ✓ No  |   |                           |
| If Yes,V <sub>12a</sub> =   | pc/h                             | (Equation 25                  | 5-8)                     |   | If Yes,V <sub>12a</sub> =              |  | ı                                      | oc/h (Equation                                      | 25-18)                                  |                           |
| Capacity Che  | ecks                             |                               |                          |   | Capacity                               | y Ch   | ecks                                   |   |   |                           |
|   | Actual                           | C                             | apacity                  | LOS F?  |  |  | Actual                                 | Ca  | pacity                                  | LOS F?                    |
|   |                                  |                               |                          |   | V <sub>F</sub>                         |  | 3403                                   | Exhibit 25-1  | 4 6780                                  | No                        |
| V <sub>FO</sub>   |                                  | Exhibit 25-7                  |                          |   | $V_{FO} = V_{F}$                       | - V <sub>R</sub>   | 2744                                   | Exhibit 25-1  | 4 6780                                  | No                        |
|   |                                  |                               |                          |   | V <sub>R</sub>                         |  | 659                                    | Exhibit 25-3  | 2100                                    | No                        |
| Flow Enterin  | 7                                | ı                             |                          |   | Flow En                                | _  |  | rge Influen   |   | _                         |
| 11  | Actual                           | 1                             | Desirable                | Violation?  |  | 1  | Actual                                 | Max Desirat   |   | Violation?                |
| V <sub>R12</sub>  | ilaa Data                        | Exhibit 25-7                  | if not F                 |   | V <sub>12</sub>                        |  | 2428                                   | Exhibit 25-14                                       | 4400:All                                | No                        |
| Level of Serv   |                                  | •                             |                          |   |  |  |  | eterminatio   | •                                       | <u>r)</u>                 |
| $D_{R} = 5.475 + 0$   | • •                              | 0.0076 V <sub>12</sub> -      | 0.00627 L <sub>A</sub>   |   |  |  |  | ).0086 V <sub>12</sub> - 0.                         | 009 L <sub>D</sub>                      |                           |
| $D_R = (pc/mi)$<br>LOS = (Exhib                                       | ,                                |                               |                          |   | 1 "                                    |  | :/mi/ln)                               |   |   |                           |
| Speed Deteri  | oit 25-4)                        |                               |                          |   |  | •  | bit 25-4)                              | <u> </u>  |   |                           |
|   |                                  |                               |                          |   | <b>Speed D</b> D <sub>s</sub> = 0.4    |  |  |   |   |                           |
| M <sub>S</sub> = (Exibit 2  |                                  |                               |                          |   |  | •  | xhibit 25<br>n (Exhibit                | •   |   |                           |
| $S_R = mph (Exl$  | hibit 25-19)                     |                               |                          |   |  | •  | ,                                      | *   |   |                           |
|   | h:h:+ OF 40\                     |                               |                          |   |  | $S_0$ = 61.4 mph (Exhibit 25-19)<br>S = 52.9 mph (Exhibit 25-15) |  |   |   |                           |
| S <sub>0</sub> = mph (Exi   | •                                |                               |                          |   |  |  |  |   |   |                           |

|  | RAI                              | MPS AND F                     | <u>RAMP JUN</u>                     | <u>CTIONS W</u>                            | <u>ORKSHE</u>                                    | <u>ET </u>                                 |                          |                        |                                      |
|--|----------------------------------|-------------------------------|-------------------------------------|--|--|--|--------------------------|------------------------|--------------------------------------|
| General Infor                                  | mation                           |                               |                                     | Site Infor                                 | mation   |  |                          |                        |                                      |
| Analyst<br>Agency or Company<br>Date Performed | SEB<br>CHA<br>9/08/              |                               | Ju                                  | reeway/Dir of Tr<br>unction<br>urisdiction |  | Southbound I-8<br>Exit 4 SB On-F<br>NYSDOT |                          |                        |                                      |
| analysis Time Period                           | d PM                             | 2011                          |                                     | nalysis Year                               |  | 2036 No-Build                              |                          |                        |                                      |
| Project Description                            | Exit 4                           |                               |                                     |  |  |  |                          |                        |                                      |
| nputs  |                                  | Terrain: Level                |                                     |  |  |  |                          | Ъ.                     | A 1:                                 |
| Jpstream Adj Ramp<br>☑ Yes   ☑ Or              |                                  | Terrain. Lever                |                                     |  |  |  |                          | Downstro<br>Ramp       | eam Adj                              |
| No Of  |                                  |                               |                                     |  |  |  |                          | ☐ Yes<br>☑ No          | ☐ On<br>☐ Off                        |
| <sub>up</sub> = 2035                           |                                  |                               |                                     |  |  |  |                          | L <sub>down</sub> =    | ft                                   |
| / <sub>u</sub> = 470 v                         |                                  | S <sub>F</sub>                | <sub>F</sub> = 56.0 mph<br>Sketch ( | show lanes, L <sub>A</sub> ,               | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$                 | 0.0 mph                                    |                          | V <sub>D</sub> =       | veh/h                                |
| Conversion t                                   | o pc/h Un                        | der Base C                    | onditions                           | _  |  |  |                          |                        |                                      |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                           | Terrain                             | %Truck                                     | %Rv  | f <sub>HV</sub>                            | f <sub>p</sub>           | v = V/PH               | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 2950                             | 0.92                          | Level                               | 2  | 0  | 0.990                                      | 1.00                     |                        | 3239                                 |
| Ramp   | 1170                             | 0.93                          | Level                               | 4  | 0  | 0.980                                      | 1.00                     |                        | 1283                                 |
| UpStream<br>DownStream                         | 470                              | 0.87                          | Level                               | 1  | 0  | 0.995                                      | 1.00                     | +                      | 543                                  |
| Downstieam                                     | 1                                | Merge Areas                   |                                     | <u> </u>                                   |  |  | Diverge Area             | <br>ns                 |                                      |
| stimation o                                    |                                  | Worge 7 ii ous                |                                     |  | Estimati   | ion of v <sub>12</sub>                     |                          | 13                     |                                      |
|  | V <sub>12</sub> = V <sub>F</sub> | (P <sub>EM</sub> )            |                                     |  | 1  |  |                          | \/ \D                  |                                      |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)      |                                  |                               |                                     |  | V <sub>12</sub>                                  | $= V_R + (V_F - V_F)$                      |                          | 0)                     |                                      |
| P <sub>FM</sub> =                              |                                  | using Equation                |                                     | )  | L <sub>EQ</sub> =                                |  | (Equation :              |                        |                                      |
| ' <sub>12</sub> =                              | 1952                             |                               | TT (EXTILOR 20 0)                   | •  | P <sub>FD</sub> =                                |  | using Equa               | ation (Exnibi          | [ 25-12)                             |
|  |                                  | pc/h (Equatio                 | n 25-4 or 25-                       |  | V <sub>12</sub> =                                |  | pc/h                     | 25 15 2                | Г 1/\                                |
| or V <sub>av34</sub>                           | 5)                               |                               |                                     |  | V <sub>3</sub> or V <sub>av34</sub>              | 2 700 no/h                                 | pc/h (Equatio            |                        | 5-16)                                |
| s $V_3$ or $V_{av34} > 2,70$                   |                                  |                               |                                     |  |  |  | ? Tyes TI                |                        |                                      |
| s $V_3$ or $V_{av34} > 1.5$                    | · <del>-</del>                   |                               |                                     |  |  |  | ☐ Yes ☐ I                |                        |                                      |
| Yes,V <sub>12a</sub> =                         | <u>.</u>                         | (Equation 25-                 | 8)                                  |  | If Yes,V <sub>12a</sub> =                        |  | pc/h (Equa               | 1001 25-18             | )                                    |
| Capacity Che                                   | ecks                             |                               |                                     |  | Capacity   | y Checks                                   |                          |                        |                                      |
|  | Actual                           | Ca                            | pacity                              | LOS F?                                     |  | Actu                                       |                          | Capacity               | LOS F                                |
|  |                                  |                               |                                     |  | V <sub>F</sub>                                   |  | Exhibit 2                | 25-14                  | <del></del>                          |
| $V_{FO}$                                       | 4522                             | Exhibit 25-7                  |                                     | No   | $V_{FO} = V_{F}$                                 | - V <sub>R</sub>                           | Exhibit 2                | 25-14                  |                                      |
|  |                                  |                               |                                     |  | V <sub>R</sub>                                   |  | Exhibit 2                | 25-3                   |                                      |
| low Enterin                                    | g Merge In                       |                               |                                     |  | Flow En  | tering Div                                 | erge Influ               |                        |                                      |
|  | Actual                           |                               | esirable                            | Violation?                                 |  | Actual                                     |                          | esirable               | Violation?                           |
| V <sub>R12</sub>                               | 3235                             | Exhibit 25-7                  | 4600:All                            | No   | V <sub>12</sub>                                  | <u> </u>                                   | Exhibit 25-1             |                        | <u> </u>                             |
| evel of Serv                                   |                                  | <u>-</u>                      |                                     |  | <del></del>                                      |  | Determina                |                        | ot F)                                |
|  |                                  | 0.0078 V <sub>12</sub> - 0.00 | 627 L <sub>A</sub>                  |  |  | 1.   | + 0.0086 V <sub>12</sub> | - 0.009 L <sub>D</sub> |                                      |
| $O_{R} = 24.5 \text{ (pc)}$                    |                                  |                               |                                     |  | . "  | c/mi/ln)                                   |                          |                        |                                      |
|  | bit 25-4)                        |                               |                                     |  |  | xhibit 25-4)                               | 4!                       |                        |                                      |
| Speed Deterr                                   |                                  |                               |                                     |  | <del>                                     </del> | etermina                                   | tion                     |                        |                                      |
| $M_{\rm S} = 0.348  ({\rm Exi})$               |                                  |                               |                                     |  | 3  | xhibit 25-19)                              | 10)                      |                        |                                      |
|  | (Exhibit 25-19)                  |                               |                                     |  | L."  | oh (Exhibit 25-                            |                          |                        |                                      |
|  | (Exhibit 25-19)                  |                               |                                     |  | S <sub>0</sub> = mph (Exhibit 25-19)             |  |                          |                        |                                      |
|  | (Exhibit 25-14)                  |                               |                                     |  | S = mi   | oh (Exhibit 25-                            |                          |                        |                                      |

|   |   | MPS AND   | RAMP JUNG   |  |                                       | EET                 |   |                          |                     |                      |
|---|---|---|---|--|---------------------------------------|---------------------|---|--------------------------|---------------------|----------------------|
| General Info  | rmation                                 |   |   | Site Infor   | mation                                |                     |   |                          |                     |                      |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 9/08/                                   |   | Jui<br>Jui  | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year |                                       | Exit 5 S<br>NYSDC   | ound I-87<br>SB On-Rai<br>OT<br>o-Build | mp                       |                     |                      |
| Project Description   | Exit 4                                  |   |   |  |                                       |                     |   |                          |                     |                      |
| Inputs  |   |   |   |  |                                       |                     |   |                          | ,                   |                      |
| Jpstream Adj Ramp<br>—  |   | Terrain: Level  |   |  |                                       |                     |   |                          | Downstre<br>Ramp    | am Adj               |
| Yes O   |   |   |   |  |                                       |                     |   |                          | ✓ Yes               | ✓ On                 |
| ☑ No ☐ O  | ff                                      |   |   |  |                                       |                     |   |                          | □ No                | ☐ Off                |
| <sub>-up</sub> = ft   |   | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$ |   |  |                                       |                     |   |                          | L <sub>down</sub> = | 2035 ft              |
| $V_{\rm u} = {\rm veh/I}$   | า                                       |   | Sketch ( show lanes, $L_{A'}L_{D'}V_{P'}V_{P'}$ ) |  |                                       |                     |   |                          | V <sub>D</sub> =    | 1170 veh/l           |
| Conversion t  | o pc/h Und                              | der Base C  | Conditions  |  |                                       |                     |   |                          |                     |                      |
| (pc/h)  | V<br>(Veh/hr)                           | PHF   | Terrain   | %Truck   | %Rv                                   | 1                   | $f_{HV}$                                | $f_p$                    | v = V/PHI           | $= x f_{HV} x f_{p}$ |
| Freeway   | 2750                                    | 0.92  | Level   | 2  | 0                                     | 0.9                 | 990                                     | 1.00                     |                     | 3019                 |
| Ramp  | 470                                     | 0.87  | Level   | 1  | 0                                     | 0.9                 | 995                                     | 1.00                     |                     | 543                  |
| UpStream  |   |   |   |  |                                       | _                   |   |                          | ļ                   |                      |
| DownStream  | 1170                                    | 0.93  | Level   | 4  | 0                                     | 0.9                 | 980                                     | 1.00                     |                     | 1283                 |
| Estimation o  |   | Merge Areas   |   |  | Estimati                              | ion o               |   | Diverge Areas            | S                   |                      |
|   |   | /D )  |   |  | Loamac                                |                     | 1 12                                    |                          |                     |                      |
|   | $V_{12} = V_F$                          |   | 05.0\   |  |                                       |                     | V <sub>12</sub> =                       | $V_R + (V_F - V_F)$      | $V_R)P_{FD}$        |                      |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                             |   |   |   |  | L <sub>EQ</sub> =                     |                     |   | (Equation 2              | 25-8 or 25-9        | 9)                   |
| P <sub>FM</sub> =   |   |   | on (Exhibit 25-5)                                 |  | P <sub>FD</sub> =                     |                     |   | using Equa               | tion (Exhibit       | 25-12)               |
| / <sub>12</sub> =   | 1820                                    |   |   |  | V <sub>12</sub> =                     |                     |   | pc/h                     |                     |                      |
| $V_3$ or $V_{av34}$   | 1199 <sub> </sub><br>5)                 | pc/h (Equatio   | n 25-4 or 25-                                     |  | $V_3$ or $V_{av34}$                   |                     |   | pc/h (Equatio            | n 25-15 or 25       | 5-16)                |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                          | ,                                       | s 🔽 No  |   |  | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>34</sub> > 2,7 | 00 pc/h?                                | ☐ Yes ☐ N                | lo                  |                      |
| Is $V_3$ or $V_{av34} > 1.5$  |   |   |   |  | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>34</sub> > 1.5 | * V <sub>12</sub> /2                    | □ Yes □ N                | lo                  |                      |
| f Yes,V <sub>12a</sub> =  | · <del>-</del>                          | (Equation 25  | -8)   |  | If Yes,V <sub>12a</sub> =             |                     |   | pc/h (Equat              | tion 25-18)         |                      |
| Capacity Che  | <u>.</u>                                | (= 4===================================                 | -/  |  | Capacit                               | v Ch                | ecks                                    |                          |                     |                      |
| o apraisa y   | Actual                                  | Ca  | pacity  | LOS F?   |                                       | 1                   | Actual                                  |                          | Capacity            | LOS F                |
|   | Î                                       |   |   | 1  | V <sub>F</sub>                        | $\Box$              |   | Exhibit 25               |                     |                      |
| $V_{FO}$  | 3562                                    | Exhibit 25-7  |   | No   | $V_{FO} = V_{F}$                      | - V <sub>D</sub>    |   | Exhibit 25               | 5-14                |                      |
| FO  |   |   |   |  | V <sub>R</sub>                        |                     |   | Exhibit 2                | _                   |                      |
| Flow Enterin  | a Merae In                              | fluence A   | roa   | <u> </u>   | -                                     | torin               | na Dive                                 | erge Influe              |                     | <br>a                |
| TOW LINCINI   | Actual                                  |   | Desirable   | Violation?   | I IOW EII                             | _                   | ctual                                   | Max De                   |                     | Violation?           |
| V <sub>R12</sub>  | 2363                                    | Exhibit 25-7  | 4600:All  | No   | V <sub>12</sub>                       |                     |   | Exhibit 25-14            | 1                   |                      |
| Level of Serv   | rice Detern                             |   | f not F)  |  | <del></del>                           | Serv                | vice D                                  | eterminat                | ion (if no          | ot F)                |
|   | - 0.00734 v <sub>R</sub> + 0            |   |   |  |                                       |                     |   | 0.0086 V <sub>12</sub> - | <u> </u>            | <i>(1)</i>           |
| $P_{R} = 18.0 \text{ (p)}$  | • | 12  | A   |  |                                       | c/mi/lı             |   | 12                       | U                   |                      |
| IX -  | bit 25-4)                               |   |   |  |                                       |                     | 25-4)                                   |                          |                     |                      |
| Speed Deteri  |   |   |   |  | Speed D                               |                     |   | on                       |                     |                      |
|   | ibit 25-19)                             |   |   |  | <del>  '</del>                        | xhibit 2            |   |                          |                     |                      |
| -   | •                                       |   |   |  | 1                                     |                     | nibit 25-19                             | )                        |                     |                      |
|   | (Exhibit 25-19)                         |   |   |  |                                       |                     | nibit 25-19                             |                          |                     |                      |
| v – b∢b mnh   | (Exhibit 25-19)                         |   |   |  | <b>1</b> ~0− 111                      | hii (EXI            | IIDIL 23-19                             | ,                        |                     |                      |
|   | (Exhibit 25-14)                         |   |   |  | S = mi                                | nh / [              | nibit 25-15                             | ١                        |                     |                      |

|                                     |   |                    | FREEWA                | Y WEA\   | /ING WOR   | RKSHEE         | T              |  |              |  |
|-------------------------------------|---|--------------------|-----------------------|--|--|----------------|----------------|--|--------------|--|
| Genera                              | l Informat  | tion               |                       |  | Site Info  | rmation        |                |  |              |  |
| Date Perfor                         | Agency/Company CHA Date Performed 9/08/2011 Analysis Time Period PM |                    |                       |  | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | Exit 2<br>NYSE | I-87 Northbound<br>Exit 2E on to 2W off<br>NYSDOT<br>2036 No-Build |              |  |
| Inputs                              |   |                    |                       |  | 1  |                |                |  |              |  |
| Weaving nu<br>Weaving se<br>Terrain | ee-flow speed,<br>umber of lanes,<br>eg length, L (ft)              | , N                | 56<br>4<br>815<br>Lev | el   | Weaving type<br>Volume ratio<br>Weaving ratio              | , VR           |                | A<br>0.2<br>0.3  |              |  |
| Conver                              | sions to p  | oc/h Unde          | r Base C              | ondition   |  |                | _              |  | _            |  |
| (pc/h)                              | V   | PHF                | Truck %               | RV %   | E <sub>T</sub>   | E <sub>R</sub> | $f_{HV}$       | fp   | V            |  |
| $V_{o1}$                            | 3980  | 0.86               | 2                     | 0  | 1.5  | 1.2            | 0.990          | 1.00   | 4674         |  |
| $V_{o2}$                            | 0   | 0.92               | 2                     | 0  | 1.5  | 1.2            | 0.990          | 1.00   | 0            |  |
| $V_{w1}$                            | 860   | 0.92               | 2                     | 0  | 1.5  | 1.2            | 0.990          | 1.00   | 944          |  |
| $V_{w2}$                            | 470   | 0.92               | 2                     | 0  | 1.5  | 1.2            | 0.990          | 1.00   | 515          |  |
| V <sub>w</sub>                      | 1   | •                  |                       | 1459   | V <sub>nw</sub>  |                |                | •  | 4674         |  |
| V                                   | 7   |                    |                       | <u> </u>   | 1  | ı              |                |  | 6133         |  |
| Weavin                              | g and No  | n-Weavin           | g Speeds              | 3  |  |                |                |  |              |  |
|                                     |   |                    | Unconstr              | 4  |  |                |                | trained  |              |  |
| a /F.,hihia 2                       | 4.7   | Weaving            | <u> </u>              |  | ving (i = nw)  | Weavii         | ng (i = w)     | Non-Wea  | ving ( = nw) |  |
| a (Exhibit 2)<br>b (Exhibit 2)      |   | 0.15<br>2.20       |                       | <del>,                                      </del> | .00  |                |                |  |              |  |
| c (Exhibit 2                        |   | 0.97               |                       |  | .30  |                |                |  |              |  |
| d (Exhibit 2                        |   | 0.80               |                       |  | .75  |                |                |  |              |  |
| Weaving intens                      |   | 1.38               |                       | 0  | .75  |                |                |  |              |  |
| Weaving and no<br>speeds, Si (mi/l  |   | 34.30              | )                     | 41   | .35  |                |                |  |              |  |
| Number of I<br>Maximum n            | anes required<br>umber of lanes                                     | s, Nw (max)        |                       |  | 1.33<br>1.40   |                |                | •  |              |  |
|                                     | If Nw < Nw  | <u> </u>           |                       |  |  |                | v (max) const  | rained operati   | on           |  |
| Weavin                              | g Segmei  | nt Speed,          |                       |  | f Service,   | and Cap        | acity          |  |              |  |
|                                     | egment speed,   |                    |                       | 39.42  |  |                |                |  |              |  |
| Weaving se<br>Level of ser          | egment density  | , ט (pc/mi/ln)     |                       | 38.90  |  |                |                |  |              |  |
|                                     | base condition  | n c (nc/h)         |                       | E<br>4522  |  |                |                |  |              |  |
|                                     | a 15-minute fl  |                    | /h)                   | 6533<br>6468                                       |  |                |                |  |              |  |
|                                     | a full-hour vol   |                    |                       | 5660   |  |                |                |  |              |  |
| Notes                               | a iuii-iiuui VUI  | wille, ch (veil/II | ,                     | 3000   |  |                |                |  |              |  |
| h40rG2                              |   |                    |                       |  |  |                |                |  |              |  |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|                                     |   |                          | FREEWA  | Y WEAV   | /ING WOR   | KSHEE          | Т              |  |              |  |
|-------------------------------------|---|--------------------------|---|----------|--|----------------|----------------|--|--------------|--|
| Genera                              | l Informat  | ion                      |   |          | Site Info  | rmation        |                |  |              |  |
| Date Perfor                         | Analyst SEB Agency/Company CHA Date Performed 6/22/2011 Analysis Time Period PM |                          |   |          | Freeway/Dir of Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | Exit 2<br>NYSE | I-87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2036 No-Build |              |  |
| Inputs                              |   |                          |   |          |  |                |                |  |              |  |
| Weaving nu<br>Weaving se<br>Terrain | ee-flow speed,<br>Imber of lanes,<br>eg length, L (ft)                          | N                        | 56<br>4<br>810<br>Lev                         | el       | Weaving type<br>Volume ratio,<br>Weaving ratio             | VR             |                | A<br>0.2<br>0.2  |              |  |
| <b> </b>                            | sions to p  | oc/h Unde                | r Base C                                      | onditio  |  | r              | 1              | î  | 1            |  |
| (pc/h)                              | V   | PHF                      | Truck %                                       | RV %     | E <sub>T</sub>   | E <sub>R</sub> | $f_{HV}$       | fp   | V            |  |
| $V_{o1}$                            | 3220  | 0.92                     | 2   | 0        | 1.5  | 1.2            | 0.990          | 1.00   | 3534         |  |
| $V_{02}$                            | 0   | 0.92                     | 2   | 0        | 1.5  | 1.2            | 0.990          | 1.00   | 0            |  |
| $V_{w1}$                            | 910   | 0.92                     | 2   | 0        | 1.5  | 1.2            | 0.990          | 1.00   | 999          |  |
| $V_{w2}$                            | 230   | 0.92                     | 2   | 0        | 1.5  | 1.2            | 0.990          | 1.00   | 252          |  |
| V <sub>w</sub>                      | 1   | ,                        |   | 1251     | V <sub>nw</sub>  |                |                | Į.   | 3534         |  |
| v                                   | 7   |                          |   |          |  | l              |                |  | 4785         |  |
| Weavin                              | g and No  | n-Weavin                 | g Speeds                                      | <u> </u> |  |                |                |  |              |  |
|                                     |   |                          | Unconstr                                      |          |  |                |                | trained  |              |  |
| /E 1 !! !! 0                        | 4.4   | Weaving                  |   |          | aving (i = nw)   | Weavii         | ng (i = w)     | Non-Wea  | ving ( = nw) |  |
| a (Exhibit 2)<br>b (Exhibit 2)      |   | 0.15<br>2.20             |   | 1        | 0035   |                |                |  |              |  |
| c (Exhibit 2                        |   | 0.97                     |   | !        | .30  |                |                |  |              |  |
| d (Exhibit 2                        |   | 0.80                     |   |          | 1.75   |                |                |  |              |  |
| Weaving intens                      |   | 1.14                     |   | C        | 1.59   |                |                |  |              |  |
| Weaving and no speeds, Si (mi/l     | on-weaving<br>h)  | 36.50                    | )   | 44       | 4.02   |                |                |  |              |  |
| Maximum n                           | anes required<br>umber of lanes If Nw < Nw                                      | s, Nw (max)              | •   |          | 1.36<br>1.40   | if Nw > N      | v (max) consti | rained operati   | on           |  |
|                                     |   | ` '                      |   |          | f Service,   |                |                |  |              |  |
|                                     | egment speed,   |                          | <u>, , , , , , , , , , , , , , , , , , , </u> | 41.77    | ,  |                | <u> </u>       |  |              |  |
| Weaving se                          | egment density,   | , D (pc/mi/ln)           |   | 28.64    |  |                |                |  |              |  |
| Level of ser                        | vice, LOS   |                          |   | D        |  |                |                |  |              |  |
| Capacity of                         | base condition  | ı, c <sub>b</sub> (pc/h) |   | 6395     |  |                |                |  |              |  |
| Capacity as                         | a 15-minute fl  | ow rate, c (ver          | ı/h)  | 6332     |  |                |                |  |              |  |
| Capacity as                         | Capacity as a full-hour volume, c <sub>h</sub> (veh/h) 5                        |                          |   |          |  |                |                |  |              |  |
| Notes                               |   |                          |   |          |  |                |                |  |              |  |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  | BASIC FI   | REEWAY SE                | GMENTS W   | ORKSHEET   |  |   |
|--|--|--------------------------|--|--|--|---|
| S0   Free-Flow Speed FFS = 75 mith 70 mith 70 mith 65 mith 60 mith 55 mith 70   Free-Flow Speed FFS = 75 mith 70 mit | B C C  | 450<br>(600<br>1750<br>0 |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO:<br>FFS, LO:<br>FFS, LO:<br>FFS, LO: | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D            |
| 0 400 800  | 1200<br>Flow Rate (pc/h/lin  | 1600 2000<br>)           | 2400   |  |  |   |
| General Information  |  |                          | Site Inform  |  |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>12/13/2011<br>PM                                     |                          | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea                              | ection of Travel   | Northbou<br>Exit 4 off<br>NYSDOT<br>2046 No-                     | to Exit 4 on  |
| ✓ Oper.(LOS)   |  |                          | Des.(N)  |  | ☐ Plan   | ning Data   |
| Flow Inputs Volume, V  | 4550   | veh/h                    | Peak-Hour Fa   | actor DHE  | 0.86   | <b>J</b>  |
| AADT   | 4000   | veh/day                  | %Trucks and  |  | 2  |   |
| Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment  | 1.00   | veh/h                    | %RVs, P <sub>R</sub><br>General Terra<br>Grade %                                     | ain:<br>Length<br>Up/Down %  | 0<br>Level<br>mi   |   |
| Calculate Flow Adjustr   | nents  |                          |  | •  |  |   |
| $f_p$  | 1.00   |                          | $E_R$  |  | 1.2  |   |
| $E_T$  | 1.5  |                          | $f_{HV} = 1/[1+P_T(E)]$  | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |   |
| Speed Inputs   |  |                          | Calc Spee  | d Adj and FFS  | 6  |   |
| Lane Width   | 12.0   | ft                       | $f_{LW}$   |  |  | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft                       | f <sub>LC</sub>  |  |  | mi/h  |
| Interchange Density  | 0.50   | I/mi                     | f <sub>ID</sub>  |  |  | mi/h  |
| Number of Lanes, N   | 3  |                          | t .ID  |  |  |   |
| FFS (measured)   | 56.0   | mi/h                     | 'N   |  |  | mi/h  |
| Base free-flow Speed, BFFS   |  | mi/h                     | FFS  |  | 56.0   | mi/h  |
| LOS and Performance  | Measures   |                          | Design (N  |  |  |   |
| Operational (LOS) v <sub>p</sub> = (V or DDHV) / (PHF x N : f <sub>p</sub> )   | x f <sub>HV</sub> x 1781   | pc/h/ln                  | Design (N) Design LOS $v_p = (V \text{ or DD})$                                      | )HV) / (PHF x N x  | f <sub>HV</sub> x  | pc/h  |
| S  | 56.0<br>31.8   | mi/h<br>pc/mi/ln         | f <sub>p</sub> )<br>S  |  |  | mi/h  |
| D = v <sub>p</sub> / S<br>LOS  | 31.8<br>D  | ρο/πι/π                  | D = v <sub>p</sub> / S<br>Required Nu  | mber of Lanes, N   |  | pc/mi/ln  |
| Glossary   |  |                          | Factor Loc   |  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base freed our volume |                          | E <sub>R</sub> - Exhibits2<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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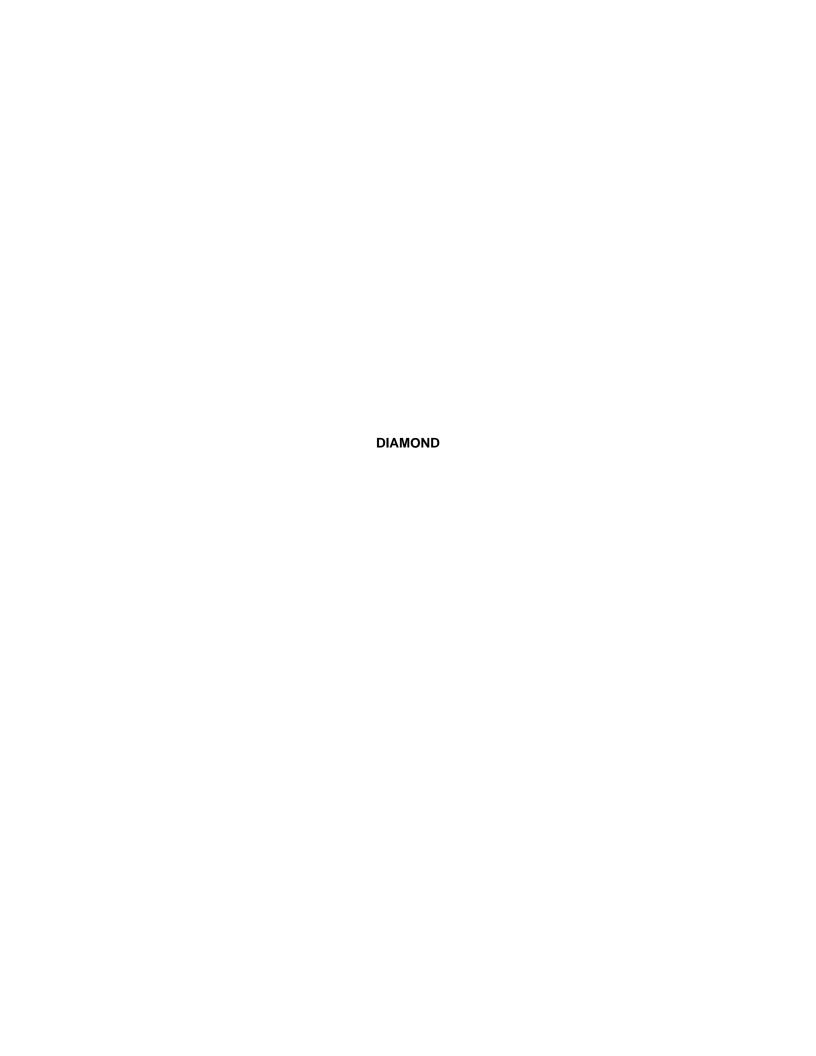
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|  | BASIC FI   | REEWAY SE               | GMENTS W   | ORKSHEET   |   |   |
|--|--|-------------------------|--|--|---|---|
| Wernige Passenger (mith)  20  20  20  20  20  20  20  20  20  2  | B C C  | 450<br>600<br>1750<br>0 |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, V<br>FFS, LOS<br>FFS, N, V<br>FFS, LOS<br>FFS, LOS | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D            |
| 0 400 800  | 1200<br>Flow Rate (pc/h/lin  | 1600 2000<br>)          | 2400   |  |   |   |
| General Information  |  |                         | Site Inform  |  |   |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4                             | SEB<br>CHA<br>12/13/2011<br>PM   |                         | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea              | ection of Travel   | Southbou<br>Exit 5 on<br>NYSDOT<br>2046 No-                         | to Exit 4 on  |
| ✓ Oper.(LOS)   |  |                         | Des.(N)  |  | ☐ Plan  | ning Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 3050   | veh/h<br>veh/day        | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level   |   |
| DDHV = AADT x K x D Driver type adjustment   | 1.00   | veh/h                   | Grade %  | Length<br>Up/Down %  | mi  |   |
| Calculate Flow Adjustr   | 1.00   |                         | E <sub>R</sub>   |  | 1.2   |   |
| f <sub>p</sub><br>E <sub>⊤</sub>   | 1.5  |                         |  | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990   |   |
| Speed Inputs   | 7.0  |                         |  | d Adj and FFS  |   |   |
| Lane Width   | 12.0   | ft                      |  | a Auj ana 110  |   |   |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft                      | f <sub>LW</sub>  |  |   | mi/h  |
| Interchange Density  | 0.50   | I/mi                    | f <sub>LC</sub>  |  |   | mi/h  |
| Number of Lanes, N   | 3  | 1/1111                  | $f_{ID}$   |  |   | mi/h  |
| FFS (measured)   | <i>56.0</i>  | mi/h                    | $f_N$  |  |   | mi/h  |
|  | 30.0   | mi/h                    | FFS  |  | 56.0  | mi/h  |
| Base free-flow Speed, BFFS LOS and Performance   | Moasuros   | 1111/11                 | Docian (N)   | <u> </u>   |   |   |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N :   |  | pc/h/ln                 | Design (N) Design LOS  v <sub>p</sub> = (V or DD                     | )<br>)HV) / (PHF x N x t   | f <sub>HV</sub> x   | pc/h  |
| ք <sub>թ</sub> )<br>Տ  | 56.0   | mi/h                    | f <sub>p</sub> )   |  |   | ρο/11   |
| D = v <sub>p</sub> / S   | 19.9   | pc/mi/ln                | S  |  |   | mi/h  |
| LOS  | C  | I- 2                    | D = v <sub>p</sub> / S<br>Required Nu                                | mber of Lanes, N   |   | pc/mi/ln  |
| Glossary   |  |                         | Factor Loc   | cation   |   |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho | S - Speed D - Density FFS - Free-flow BFFS - Base freed to the second control of the sec |                         | f <sub>p</sub> - Page 23-  | 23-8, 23-10, 23-1  |   | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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|  | BASIC F  | REEWAY SI                        | EGMENTS W   | ORKSHEET   |  |  |
|--|--|----------------------------------|---|--|--|--|
| Wassengle Passengle Passen | By C.  | 1600 200                         | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, V <sub>p</sub><br>FFS, LOS, V<br>FFS, LOS, I<br>FFS, N, AA<br>FFS, LOS, I | vi v <sub>p</sub> , S, D<br>Dt LOS, S, D<br>AADT N, S, D   |
| General Information  | riou rate (perim                                     | V.;                              | Site Inform   | nation   |  |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>AM                         |                                  | -   | ection of Travel   | Northbound<br>Exit 2 to Ex<br>NYSDOT<br>2016 Diame   | it 4   |
| Oper.(LOS)   |  |                                  | Des.(N)   |  | ☐ Planni   | ng Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment   | 3300   | veh/h<br>veh/day<br>veh/h        | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade % | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi  |  |
| Calculate Flow Adjustr   |  |                                  |   | <u>оргионт 70</u>  |  |  |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.00<br>1.5  |                                  | E <sub>R</sub><br>f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E                      | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 1.2<br>0.990   |  |
| Speed Inputs   |  |                                  |   | d Adj and FFS  | <b>)</b>   |  |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured) Base free-flow Speed, BFFS   | 12.0<br>6.0<br>0.50<br>3<br>56.0                     | ft<br>ft<br>I/mi<br>mi/h<br>mi/h | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS              | •  | 56.0   | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h   |
| LOS and Performance  |  | 1111/11                          | Dosign (N)  | \  |  |  |
| Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ $S$ $D = v_p / S$ LOS   |  | pc/h/ln<br>mi/h<br>pc/mi/ln      | $f_p$ ) $S$ $D = v_p / S$   | )HV) / (PHF x N x t  | f <sub>HV</sub> x  | pc/h<br>mi/h<br>pc/mi/ln   |
|  |  |                                  |   | mber of Lanes, N   |  |  |
| Glossary  N - Number of lanes  V - Hourly volume  v <sub>p</sub> - Flow rate  LOS - Level of service  DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flov BFFS - Base fr |                                  | f <sub>p</sub> - Page 23-   | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1 f <sub>L</sub>   | <sub>W</sub> - Exhibit 23-4<br><sub>C</sub> - Exhibit 23-5<br><sub>1</sub> - Exhibit 23-6<br><sub>D</sub> - Exhibit 23-7 |
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|  | BASIC F  | REEWAY SE                                | EGMENTS W   | ORKSHEET   |   |   |
|--|--|--|---|--|---|---|
| Wassender Carlo Box Space FIS = 75 mith 70 mith 70 mith 65 mith 60 mith 55 mith 55 mith 60 mit | B. C.  | 1450<br>1600<br>1750<br>0<br>1600<br>200 | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, V <sub>p</sub><br>FFS, LOS, V<br>FFS, LOS, N<br>FFS, N, AAI<br>FFS, LOS, A | v <sub>p</sub> , S, D<br>ot los, S, D<br>adt N, S, D              |
| General Information  | Tion New (points   | 7.                                       | Site Infori   | mation   |   |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>AM                                   |  |   | ection of Travel   | Southbound<br>Exit 4 to Exi<br>NYSDOT<br>2016 Diamo   | t 2   |
| ✓ Oper.(LOS)   |  | П  | Des.(N)   |  | ☐ Plannir   | ng Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment   | 5200   | veh/h<br>veh/day<br>veh/h                | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terr<br>Grade % | d Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi   |   |
| Calculate Flow Adjustr   |  |  |   | Op/Down 78   |   |   |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.00<br>1.5  |  | E <sub>R</sub> f <sub>1.07</sub> = 1/[1+P <sub>7</sub> (E                     | E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 1.2<br>0.990  |   |
| Speed Inputs   |  |  |   | ed Adj and FFS   |   |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured) Base free-flow Speed, BFFS   | 12.0<br>6.0<br>0.50<br>3<br>56.0                               | ft<br>ft<br>I/mi<br>mi/h<br>mi/h         | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS            | a rajuna i ro  | 56.0  | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h                              |
| LOS and Performance  | Moseuros   | 1111/11                                  | Dosign (N   | `  |   |   |
| Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N f_p)$ S $D = v_p / S$ LOS   |  | pc/h/ln<br>mi/h<br>pc/mi/ln              | $f_p$ )<br>S<br>D = $v_p$ / S   | DHV) / (PHF x N x t  | f <sub>HV</sub> X   | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |  |  |   | mber of Lanes, N   |   |   |
| Glossary  N - Number of lanes  V - Hourly volume  v <sub>p</sub> - Flow rate  LOS - Level of service  DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flov BFFS - Base frour volume |  | f <sub>p</sub> - Page 23-   | 23-8, 23-10<br>23-8, 23-10, 23-11  | I f <sub>L</sub>  | N - Exhibit 23-4 C - Exhibit 23-5 - Exhibit 23-6 C - Exhibit 23-7 |
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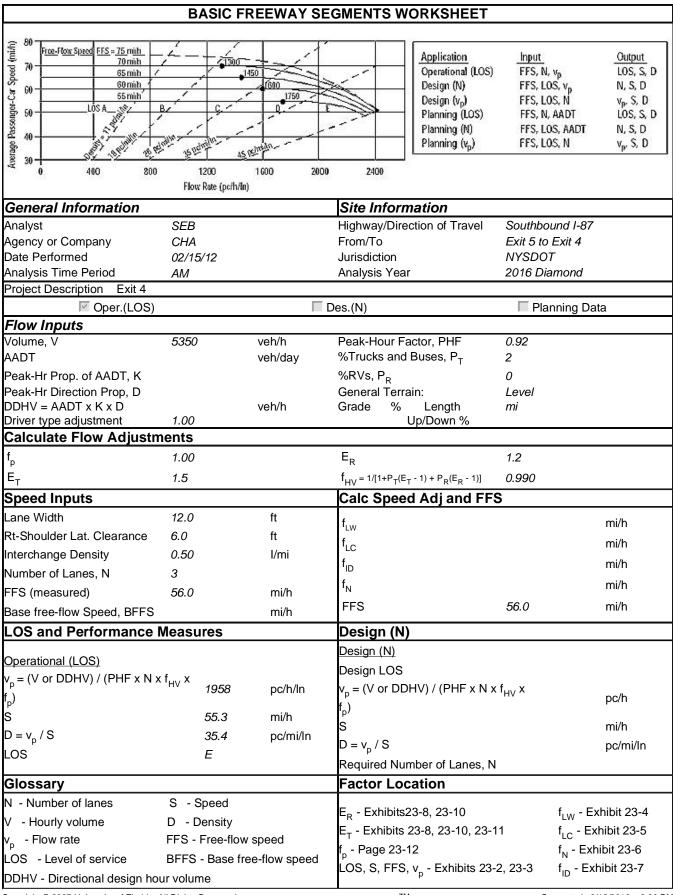
|  | BASIC F  | REEWAY SE                        | GMENTS W   | ORKSHEET   |   |  |
|--|--|----------------------------------|--|--|---|--|
| So   | B C  | 1600 2000                        | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v <sub>p</sub><br>FFS, LOS, v <sub>p</sub><br>FFS, LOS, N<br>FFS, N, AADT<br>FFS, LOS, AA<br>FFS, LOS, N |  |
| General Information  | · · · · · · · · · · · · · · · · · · ·                | 103                              | Site Inforn  | nation   |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4                                 | SEB<br>CHA<br>02/15/12<br>AM                         |                                  |  | ction of Travel  | Northbound I<br>Exit 4 off to E<br>NYSDOT<br>2016 Diamon  | xit 4 on   |
| ✓ Oper.(LOS)   |  | П                                | Des.(N)  |  | ☐ Planning  | Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment | 2450   | veh/h<br>veh/day<br>veh/h        | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade %  | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi   |  |
| Calculate Flow Adjustn   | nents  |                                  |  |  |   |  |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.00<br>1.5  |                                  | $E_{R}$ $f_{HV} = 1/[1+P_{T}(E_{T})]$  | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 1.2<br>0.990  |  |
| Speed Inputs   |  |                                  | Calc Spee  | d Adj and FFS  | 3   |  |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured) Base free-flow Speed, BFFS   | 12.0<br>6.0<br>0.50<br>3<br>56.0                     | ft<br>ft<br>I/mi<br>mi/h<br>mi/h | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS   |  | 56.0  | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h                               |
| LOS and Performance  | Massuras   | 1110/11                          | Design (N)   | 1  |   |  |
| Operational (LOS)<br>$V_p = (V \text{ or DDHV}) / (PHF \times N)$<br>$f_p)$<br>S<br>$D = V_p / S$<br>LOS                 |  | pc/h/ln<br>mi/h<br>pc/mi/ln      | $\begin{array}{l} \underline{\text{Design (N)}} \\ \underline{\text{Design LOS}} \\ v_p = (V \text{ or DD} \\ f_p) \\ \underline{\text{S}} \\ \underline{\text{D}} = v_p / \underline{\text{S}} \end{array}$ | HV) / (PHF x N x   | f <sub>HV</sub> x   | pc/h<br>mi/h<br>pc/mi/ln   |
| Glossary   |  |                                  | Factor Loc   |  |   |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho     | S - Speed D - Density FFS - Free-flov BFFS - Base fr |                                  | E <sub>R</sub> - Exhibits2<br>E <sub>T</sub> - Exhibits3<br>f <sub>p</sub> - Page 23-  | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1 f <sub>LC</sub>   | - Exhibit 23-4<br>- Exhibit 23-5<br>Exhibit 23-6<br>- Exhibit 23-7 |
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|  | BASIC F   | REEWAY SE                               | EGMENTS W   | ORKSHEET   |  |   |
|--|---|---|---|--|--|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 70 mith 65 mith 55 mith 55 mith 40 mith 70 mi | B C   | 450<br>(600<br>1750<br>0<br>1600<br>200 | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO<br>FFS, LO<br>FFS, N,<br>FFS, LO | S, V <sub>p</sub> N, S, D<br>S, N V <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D          |
| General Information  | Flow Rate (pc/h/lin                                     | )                                       | Site Inforn   | nation   |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>AM                            |   |   | ction of Travel  | Southboo<br>Exit 4 off<br>NYSDOT<br>2016 Dia                 | to Exit 4 on  |
| Oper.(LOS)   |   |   | Des.(N)   |  | ☐ Plar   | nning Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 4700  | veh/h<br>veh/day                        | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra                  | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level                                      |   |
| DDHV = AADT x K x D Driver type adjustment  Calculate Flow Adjustr   | 1.00<br><b>nents</b>                                    | veh/h                                   | Grade %   | Length<br>Up/Down %  | mi   |   |
| fp   | 1.00  |   | E <sub>R</sub>  |  | 1.2  |   |
| E <sub>T</sub>   | 1.5   |   | $f_{HV} = 1/[1 + P_T(E_T)]$   | r - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |   |
| Speed Inputs   |   |   | Calc Speed  | d Adj and FFS  | 3  |   |
| Lane Width<br>Rt-Shoulder Lat. Clearance<br>Interchange Density<br>Number of Lanes, N  | 12.0<br>6.0<br>0.50<br>3                                | ft<br>ft<br>I/mi                        | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub>                                       |  |  | mi/h<br>mi/h<br>mi/h<br>mi/h  |
| FFS (measured)   | 56.0  | mi/h                                    | IN  |  | <i>EC</i> 0  |   |
| Base free-flow Speed, BFFS   |   | mi/h                                    | FFS   |  | 56.0   | mi/h  |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ )  S $D = v_p / S$ LOS   |   | pc/h/ln<br>mi/h<br>pc/mi/ln             | $f_p$ )<br>S<br>D = $v_p$ / S   | HV) / (PHF x N x   | f <sub>HV</sub> x  | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |   |   | Factor Loc  |  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base front |   | E <sub>R</sub> - Exhibits2<br>E <sub>T</sub> - Exhibits2<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_N$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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|  | BASIC F                      | REEWAY SE        | GMENTS WORKSHEET  |   |  |
|--|------------------------------|------------------|---|---|--|
| 80 Froe-Flow Speed FFS = 75 mith 70 mith 90 mi |                              | 1600 2000        | Application Operational (LOS Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AADT FFS, LOS, N | Output<br>LOS, S, D<br>N, S, D<br>v <sub>p</sub> , S, D<br>LOS, S, D<br>N, S, D<br>v <sub>p</sub> , S, D |
| General Information  |                              |                  | Site Information  |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>AM |                  | Highway/Direction of Travel<br>From/To<br>Jurisdiction<br>Analysis Year   | Northbound I-8<br>Exit 4 to Exit 5<br>NYSDOT<br>2016 Diamond  | 7  |
| ✓ Oper.(LOS)   |                              |                  | Des.(N)   | ☐ Planning □  | )ata   |
| Flow Inputs Volume, V  | 2500                         | veh/h            | Peak-Hour Factor, PHF   | 0.92  |  |
| AADT<br>Peak-Hr Prop. of AADT, K   | 2000                         | veh/day          | %Trucks and Buses, $P_T$ %RVs, $P_R$  | 2<br>0  |  |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D<br>Driver type adjustment<br><b>Calculate Flow Adjust</b> n   | 1.00                         | veh/h            | General Terrain:<br>Grade % Length<br>Up/Down %   | Level<br>mi   |  |
|  | 1.00                         |                  | E <sub>R</sub>  | 1.2   |  |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.00<br>1.5                  |                  | $f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]$  | 0.990   |  |
| -⊤<br>Speed Inputs   | 1.0                          |                  | Calc Speed Adj and Fl   |   |  |
| Lane Width   | 12.0                         | ft               | 1   |   | ://-   |
| Rt-Shoulder Lat. Clearance   | 6.0                          | ft               | f <sub>LW</sub>   |   | mi/h   |
| nterchange Density   | 0.50                         | I/mi             | f <sub>LC</sub>   |   | mi/h   |
| Number of Lanes, N   | 3                            |                  | f <sub>ID</sub>   |   | mi/h   |
| FFS (measured)   | 56.0                         | mi/h             | f <sub>N</sub>  |   | mi/h   |
| Base free-flow Speed, BFFS   |                              | mi/h             | FFS   | 56.0  | mi/h   |
| LOS and Performance  | Measures                     |                  | Design (N)  |   |  |
| Operational (LOS) v <sub>p</sub> = (V or DDHV) / (PHF x N x  | x f <sub>HV</sub> x<br>915   | pc/h/ln          | Design (N) Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N   | x f <sub>HV</sub> x   | n a //a  |
| r <sub>p</sub> )<br>S  | EC O                         | mi/h             | $f_p$   |   | pc/h   |
| S<br>D = v <sub>p</sub> / S  | 56.0<br>16.3                 | mi/h<br>pc/mi/In | S   |   | mi/h   |
| LOS  | 10.3<br>B                    | ρωπι/π           | $D = v_p / S$<br>Required Number of Lanes,  | N   | pc/mi/ln   |
| Glossary   |                              |                  | Factor Location   |   |  |
| N - Number of lanes  | S - Speed                    |                  |   |   | Fullible 00 4  |
| V - Hourly volume  | D - Density                  |                  | E <sub>R</sub> - Exhibits 23-8, 23-10   |   | Exhibit 23-4   |
| v <sub>p</sub> - Flow rate   | FFS - Free-flo               | w speed          | E <sub>T</sub> - Exhibits 23-8, 23-10, 23   |   | Exhibit 23-5   |
| LOS - Level of service<br>DDHV - Directional design ho   |                              | ree-flow speed   | f <sub>p</sub> - Page 23-12<br>LOS, S, FFS, v <sub>p</sub> - Exhibits 2   | • •   | xhibit 23-6<br>xhibit 23-7   |
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|  | BASIC F                      | REEWAY SE              | GMENTS W                      | ORKSHEET  |  |   |
|--|------------------------------|------------------------|-------------------------------|---|--|---|
| South   Sout   | -/                           | 450<br>(600)<br>1750   |                               | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) | Input<br>FFS, N, v <sub>p</sub><br>FFS, LOS, v <sub>p</sub><br>FFS, LOS, N | Output<br>LOS, S, D<br>N, S, D<br>v <sub>p</sub> , S, D |
| D-segment of the segment of the segm |                              | Religion -             |                               | Planning (LOS)<br>Planning (N)<br>Planning (v <sub>p</sub> )      | FFS, N, AADT<br>FFS, LOS, AAD<br>FFS, LOS, N                               | LOS, S, D<br>N, S, D<br>v <sub>p</sub> , S, D           |
| 0 400 800  | 1200<br>Filow Rate (pc/h/lin | 1600 200 <b>0</b><br>) | 2400                          |   |  |   |
| General Information  |                              |                        | Site Inform                   | nation  |  |   |
| Analyst  | CLD                          |                        |                               | ction of Travel   | Northbound I-  | -   |
| Agency or Company  | CHA                          |                        | From/To                       |   | Exit 5 to Exit 6   | •   |
| Date Performed<br>Analysis Time Period   | 07/29/13                     |                        | Jurisdiction                  |   | NYSDOT<br>2016 Diamond   | ı   |
| Project Description Exit 4   | AM                           |                        | Analysis Year                 | I   | 2016 Diamond   | 1   |
| ✓ Oper.(LOS)   |                              |                        | Des.(N)                       |   | ☐ Planning   | Data  |
| Flow Inputs  |                              |                        | ( )                           |   |  |   |
| Volume, V  | 2400                         | veh/h                  | Peak-Hour Fa                  | actor, PHF  | 0.92   |   |
| AADT   |                              | veh/day                | %Trucks and                   | Buses, P <sub>T</sub>   | 2  |   |
| Peak-Hr Prop. of AADT, K   |                              |                        | %RVs, P <sub>R</sub>          |   | 0  |   |
| Peak-Hr Direction Prop, D  |                              | le /le                 | General Terra                 |   | Level  |   |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00                         | veh/h                  | Grade %                       | Length<br>Up/Down %   | mi   |   |
| Calculate Flow Adjustr   |                              |                        |                               | <del>оргосин 70</del>   |  |   |
| f <sub>p</sub>   | 1.00                         |                        | E <sub>R</sub>                |   | 1.2  |   |
| E <sub>T</sub>   | 1.5                          |                        |                               | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]          | 0.990  |   |
| Speed Inputs   |                              |                        |                               | d Adj and FFS   | 1  |   |
| Lane Width   | 12.0                         | ft                     |                               | <u></u>   |  | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0                          | ft                     | f <sub>LW</sub>               |   |  |   |
| Interchange Density  | 0.50                         | I/mi                   | f <sub>LC</sub>               |   |  | mi/h  |
| Number of Lanes, N   | 4                            |                        | $f_{ID}$                      |   |  | mi/h  |
| FFS (measured)   | 56.0                         | mi/h                   | $f_N$                         |   |  | mi/h  |
| Base free-flow Speed, BFFS   |                              | mi/h                   | FFS                           |   | 56.0   | mi/h  |
| LOS and Performance  | Measures                     |                        | Design (N)                    | )   |  |   |
| Operational (LOS)<br>V <sub>p</sub> = (V or DDHV) / (PHF x N x   |                              |                        | Design (N)<br>Design LOS      |   |  |   |
| f <sub>p</sub> )   | 039                          | pc/h/ln                | $v_p = (V \text{ or DD} f_p)$ | PHV) / (PHF x N x   | f <sub>HV</sub> x  | pc/h  |
| S C  | 56.0                         | mi/h                   | S S                           |   |  | mi/h  |
| $D = v_p / S$  | 11.8                         | pc/mi/ln               | $D = v_p / S$                 |   |  | pc/mi/ln  |
| LOS  | В                            |                        |                               | mber of Lanes, N  |  | ·   |
| Glossary   |                              |                        | Factor Loc                    |   |  |   |
| N - Number of lanes  | S - Speed                    |                        | 1                             |   | t  | Euleileit 00 4  |
| V - Hourly volume  | D - Density                  |                        | E <sub>R</sub> - Exhibits2    |   | =  | Exhibit 23-4  |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow              | / speed                | ·                             | 23-8, 23-10, 23-1   |  | Exhibit 23-5  |
| LOS - Level of service   | BFFS - Base fro              |                        | f <sub>p</sub> - Page 23-     |   |  | Exhibit 23-6  |
| DDHV - Directional design ho   |                              | ·                      | LOS, S, FFS,                  | , v <sub>p</sub> - Exhibits 23-2                                  | 2, 23-3 t <sub>ID</sub> -  | Exhibit 23-7  |
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|   | BASIC FI  | REEWAY SE          | GMENTS V   | VORKSHEET  |  |  |
|---|---|--------------------|--|--|--|--|
| No.   No. | B C C   | 150<br>600<br>1750 |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AAI FFS, LOS, N | Output  LOS, S, D  N, S, D  v <sub>p</sub> , S, D  LOS, S, D  N, S, D  v <sub>p</sub> , S, D |
| 0 400 800   | ) 1200<br>Flow Rate (pc/h/ln)                         | 1600 2000          | 2400   |  |  |  |
| General Information   |   |                    | Site Infor   | mation   |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period  | CLD<br>CHA<br>07/29/13<br>AM                          |                    | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea                            | ection of Travel<br>ar   | Southbound I<br>Exit 6 to Exit S<br>NYSDOT<br>2016 Diamon  | 5  |
| Project Description Exit 4  Oper.(LOS)  |   | Г                  | Des.(N)  |  | ☐ Planning   | Data   |
| Flow Inputs   |   |                    | Des.(11)   |  | - i laililling   | Data   |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K   | 6100  | veh/h<br>veh/day   | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub>                                 | d Buses, P <sub>T</sub>  | 0.92<br>2<br>0   |  |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjustr   | 1.00  | veh/h              | General Terr<br>Grade %  |  | Level<br>mi  | _  |
|   | 1.00  |                    | E <sub>R</sub>   |  | 1.2  |  |
| f <sub>p</sub><br>E <sub>⊤</sub>  | 1.5   |                    |  | E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990  |  |
| Speed Inputs  |   |                    | -  | ed Adj and FFS   |  |  |
| Lane Width  | 12.0  | ft                 |  | za Aaj ana 11 c  | <u> </u>   | ://-   |
| Rt-Shoulder Lat. Clearance  | 6.0   | ft                 | f <sub>LW</sub>  |  |  | mi/h   |
| Interchange Density   | 0.50  | I/mi               | f <sub>LC</sub>  |  |  | mi/h   |
| Number of Lanes, N  | 4   |                    | f <sub>ID</sub>  |  |  | mi/h   |
| FFS (measured)  | 56.0  | mi/h               | f <sub>N</sub>   |  |  | mi/h   |
| Base free-flow Speed, BFFS  |   | mi/h               | FFS  |  | 56.0   | mi/h   |
| LOS and Performance   | Measures  |                    | Design (N  | 1)   |  |  |
| Operational (LOS)<br>V <sub>p</sub> = (V or DDHV) / (PHF x N :<br>f <sub>p</sub> )  | x f <sub>HV</sub> x 1674                              | pc/h/ln            | Design (N) Design LOS v <sub>p</sub> = (V or DI                                    | -  | f <sub>HV</sub> x  | pc/h   |
| S<br>D = v <sub>p</sub> / S<br>LOS  | 56.0<br>29.9<br>D                                     | mi/h<br>pc/mi/ln   | t <sub>p</sub> ) S D = v <sub>p</sub> / S Required Nu                              | umber of Lanes, N  |  | mi/h<br>pc/mi/ln   |
| Glossary  |   |                    | Factor Lo  |  |  |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho  | S - Speed D - Density FFS - Free-flow BFFS - Base fre |                    | E <sub>R</sub> - Exhibits<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23 | s23-8, 23-10<br>s 23-8, 23-10, 23-1°   | 1 f <sub>LC</sub>  | - Exhibit 23-4<br>- Exhibit 23-5<br>Exhibit 23-6<br>Exhibit 23-7                             |
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|   | RAI                              | WPS AND            | RAMP JUNG         | SHONS W  | ORKSHE  | <u>:EI</u>   |                       |  |                                       |  |  |
|---|----------------------------------|--------------------|-------------------|--|---|--|-----------------------|--|---------------------------------------|--|--|
| General Info  | rmation                          |                    |                   | Site Infor   | mation  |  |                       |  |                                       |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 02/15<br>d AM                    | 5/12               | Ju<br>Ju          | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | E<br>N  | Northbound I-<br>Exit 2W On-R<br>NYSDOT<br>2016 Diamon | amp                   |  |                                       |  |  |
| Project Description   | Exit 4                           |                    |                   |  |   |  |                       |  |                                       |  |  |
| Inputs  |                                  | <u> </u>           |                   |  |   |  |                       |  |                                       |  |  |
| Upstream Adj Ramp   |                                  | Terrain: Level     |                   |  |   |  |                       | Downstr<br>Ramp                                  | eam Adj                               |  |  |
| Yes O   |                                  |                    |                   |  |   |  |                       | ☐ Yes  | □ On                                  |  |  |
| No ✓ Of   |                                  |                    |                   |  |   |  |                       | I −  | ☐ Off                                 |  |  |
| $J_{u} = 1100$ $J_{u} = 660 \text{ V}$                                |                                  | S                  | FF = 56.0 mph     | show lanes, L <sub>A</sub> ,                           | $S_{FR} = 40.0 \text{ mph}$ $V_D = \text{veh/h}$  |  |                       |  |                                       |  |  |
| Conversion t  | to pc/h Und                      | der Base C         |                   | . A  | D' R' I'  |  |                       |  |                                       |  |  |
| (pc/h)  | V<br>(Veh/hr)                    | PHF                | Terrain           | %Truck   | %Rv   | f <sub>HV</sub>  | fp                    | v = V/Ph   | HF x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway   | 2900                             | 0.92               | Level             | 2  | 0   | 0.990  |                       | 3184   |                                       |  |  |
| Ramp  | 380                              | 0.92               | Level             | 2  | 0   | 0.990  | 1.00                  |  | 417                                   |  |  |
| UpStream  | 660                              | 0.92               | Level             | 2  | 0   | 0.990  | 1.00                  |  | 725                                   |  |  |
| DownStream  |                                  |                    |                   |  |   |  |                       |  |                                       |  |  |
|   |                                  | Merge Areas        |                   |  | Diverge Areas <b>Estimation of v</b> 12   |  |                       |  |                                       |  |  |
| Estimation o  | f V <sub>12</sub>                |                    |                   |  | Estimati  | on of v <sub>12</sub>                                  | ?                     |  |                                       |  |  |
|   | V <sub>12</sub> = V <sub>F</sub> | (P <sub>FM</sub> ) |                   |  |   | ٧  | = V <sub>2</sub> + (\ | V <sub>F</sub> - V <sub>R</sub> )P <sub>FD</sub> |                                       |  |  |
| L <sub>EQ</sub> =   | 837.81                           | (Equation 2        | 5-2 or 25-3)      |  | =   | - 12   |                       | ion 25-8 or 25                                   | -0)                                   |  |  |
| P <sub>FM</sub> =   | 0.601                            | using Equati       | on (Exhibit 25-5) |  | L <sub>EQ</sub> =<br>D _  |  |                       | Equation (Exhib                                  |                                       |  |  |
| / <sub>12</sub> =   | 1915                             |                    | ,                 |  | P <sub>FD</sub> =   |  | pc/h                  | -quation (Exhib                                  | 11 25-12)                             |  |  |
|   |                                  |                    | n 25-4 or 25-     |  | V <sub>12</sub> =   |  | -                     |  | NF 1/\                                |  |  |
| / <sub>3</sub> or V <sub>av34</sub>                                   | 5)                               |                    |                   |  | V <sub>3</sub> or V <sub>av34</sub>   | 2 700 //   |                       | quation 25-15 or 2                               | (3-10)                                |  |  |
| Is $V_3$ or $V_{av34} > 2,70$   |                                  |                    |                   |  | Is V <sub>3</sub> or V <sub>av3</sub>   | -  |                       |  |                                       |  |  |
| Is $V_3$ or $V_{av34} > 1.5$  | * V <sub>12</sub> /2             | s 🗹 No             |                   |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No<br>If Yes, $V_{12a} =$ pc/h (Equation 25-18) |  |                       |  |                                       |  |  |
| Yes,V <sub>12a</sub> =  | pc/h                             | (Equation 25       | -8)               |  | If Yes,V <sub>12a</sub> =   |  | pc/h (E               | equation 25-18                                   | ·)                                    |  |  |
| Capacity Che  | ecks                             |                    |                   |  | Capacity  | / Checks   | ;                     |  |                                       |  |  |
|   | Actual                           | Ca                 | pacity            | LOS F?   |   | Act  | ual                   | Capacity   | LOS F?                                |  |  |
|   |                                  |                    |                   |  | $V_{F}$   |  | Exh                   | ibit 25-14                                       |                                       |  |  |
| $V_{FO}$  | 3601                             | Exhibit 25-7       |                   | No   | $V_{FO} = V_{F}$  | · V <sub>R</sub>                                       | Exh                   | ibit 25-14                                       |                                       |  |  |
|   |                                  |                    |                   |  | V <sub>R</sub>  |  | Exh                   | ibit 25-3  |                                       |  |  |
| Flow Enterin  | a Merae In                       | fluence A          | rea               | <u> </u>   | •   | terina Di  |                       | nfluence Ar                                      | <br>ea                                |  |  |
|   | Actual                           |                    | Desirable         | Violation?   |   | Actual   |                       | ax Desirable                                     | Violation?                            |  |  |
| V <sub>R12</sub>  | 2332                             | Exhibit 25-7       | 4600:All          | No   | V <sub>12</sub>   |  | Exhibit 2             | _  |                                       |  |  |
| Level of Serv   | J                                | nination (i        | f not F)          |  |   | Service  |                       | ination (if n                                    | ot F)                                 |  |  |
|   | - 0.00734 v <sub>R</sub> + 0     |                    |                   |  |   |  |                       | V <sub>12</sub> - 0.009 L <sub>D</sub>           |                                       |  |  |
| $P_{R} = 18.1 \text{ (p)}$  | **                               | 12                 | А                 |  |   | c/mi/ln)   |                       | 12 · · · · · D                                   |                                       |  |  |
|   | bit 25-4)                        |                    |                   |  |   | xhibit 25-4)   | ١                     |  |                                       |  |  |
| Speed Deteri  |                                  |                    |                   |  | Speed D   |  |                       |  |                                       |  |  |
| •   |                                  |                    |                   |  | _   | khibit 25-19)  | acion .               |  |                                       |  |  |
| $M_S = 0.293 \text{ (Ex}$   |                                  | 3                  |                   | 10)  |   |  |                       |  |                                       |  |  |
|   | (Exhibit 25-19)                  |                    |                   |  | ''  | oh (Exhibit 25   |                       |  |                                       |  |  |
|   | (Exhibit 25-19)                  |                    |                   |  | $S_0 = mp$  | h (Exhibit 25  | -19)                  |  |                                       |  |  |
|   | (Exhibit 25-19)                  |                    |                   |  |   | oh (Exhibit 25   |                       |  |                                       |  |  |

|  |   |  | RAMPS                    | AND RAM   | P JUNCTI  | ONS WO  | RKS               | HEET            |  |                     |                                    |  |
|--|---|--|--------------------------|---|---|---|-------------------|-----------------|--|---------------------|------------------------------------|--|
| General  | Informat                                | ion  |                          |   | Site Infor  |   |                   |                 |  |                     |                                    |  |
| Analyst<br>Agency or Co<br>Date Perform<br>Analysis Time | ompany<br>ed<br>e Period                | SEB<br>CHA<br>02/15<br>AM                    | 5/12                     | Ju<br>Ju  | eeway/Dir of Tr<br>inction<br>irisdiction<br>nalysis Year | avel r<br>E                                     | Exit 4 N<br>NYSDC |                 |  |                     |                                    |  |
| Project Descr  | iption Exit 4                           |  |                          |   |   |   |                   |                 |  |                     |                                    |  |
| Inputs   |   |  | Terrain: Level           |   |   |   |                   |                 |  | <u> </u>            | A 1:                               |  |
| Upstream Adj<br>Yes                                      | ∏ On                                    |  | Terrain. Lever           |   |   |   |                   |                 |  | Downstrea<br>Ramp   | m Aaj                              |  |
|  | Off                                     |  |                          |   |   |   |                   |                 |  | ✓ Yes               | ✓ On                               |  |
| INO  | III OII                                 |  |                          |   |   |   |                   |                 |  | □ No                | ☐ Off                              |  |
| L <sub>up</sub> =  | ft                                      |  | S                        | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$ |   |   |                   |                 |  | L <sub>down</sub> = | 1850 ft                            |  |
| V <sub>u</sub> =   | veh/h                                   |  |                          |   | show lanes, L <sub>A</sub> ,                              |   |                   |                 |  | V <sub>D</sub> =    | 560 <b>veh/h</b>                   |  |
| Convers  | ion to po                               | /h Und                                       | der Base C               | Conditions  |   |   |                   |                 |  |                     |                                    |  |
| (pc/h)   | (V                                      | V<br>'eh/hr)                                 | PHF                      | Terrain   | %Truck  | %Rv   |                   | f <sub>HV</sub> | f <sub>p</sub>                         | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 3                                       | 300  | 0.92                     | Level   | 2   | 0 0.990 1.00                                    |                   |                 |  | 36                  | 23                                 |  |
| Ramp   | 8                                       | 350  | 0.82                     | Level   | 2   | 0   | 0.                | 990             | 1.00                                   | 10-                 | 47                                 |  |
| UpStream   |   |  | <u> </u>                 |   | <u> </u>  | _   | -                 |                 |  |                     |                                    |  |
| DownStream   | 1 !                                     | 560  | 0.92<br>Merge Areas      | Level   | 2   | 0   | 0.                | 990             | 1.00                                   | 61                  | 5                                  |  |
| Estimation   |   | Diverge Areas  Estimation of v <sub>12</sub> |                          |   |   |   |                   |                 |  |                     |                                    |  |
| LStillati  |   |  | <b>/5</b> )              |   |   | LStillati                                       | 011 0             |                 | ., ,, ,,                               | `-                  |                                    |  |
| $V_{12} = V_F (P_{FM})$                                  |   |  |                          |   |   |   |                   |                 | = V <sub>R</sub> + (V <sub>F</sub> - V |                     |                                    |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                |   |  |                          |   |   | L <sub>EQ</sub> =                               |                   |                 | Equation 25-8                          |                     |                                    |  |
| P <sub>FM</sub> =  |   | using  | Equation (E              | khibit 25-5)  |   | P <sub>FD</sub> =                               |                   |                 | .621 using Ed                          | quation (Exh        | ibit 25-12)                        |  |
| V <sub>12</sub> =  |   | pc/h   |                          |   |   | V <sub>12</sub> =                               |                   |                 | 647 pc/h                               |                     |                                    |  |
| $V_3$ or $V_{av34}$                                      |   |  | (Equation 25             | -4 or 25-5)   |   | $V_3$ or $V_{av34}$                             |                   |                 | 76 pc/h (Equa                          | ation 25-15         | or 25-16)                          |  |
| Is V <sub>3</sub> or V <sub>av34</sub>                   | -                                       |  |                          |   |   |   |                   |                 | Yes 🗹 No                               |                     |                                    |  |
| Is V <sub>3</sub> or V <sub>av34</sub>                   | <sub>4</sub> > 1.5 * V <sub>12</sub> /2 |  |                          |   |   |   |                   |                 | TYes   ✓ No                            |                     |                                    |  |
| If Yes,V <sub>12a</sub> =                                |   | pc/h (                                       | (Equation 25             | -8)   |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |                   |                 |  |                     |                                    |  |
| Capacity   | Checks                                  |  |                          |   |   | Capacity  | y Ch              | ecks            |  |                     |                                    |  |
|  | ŀ                                       | Actual                                       | Ca                       | pacity  | LOS F?  |   |                   | Actual          |  | pacity              | LOS F?                             |  |
|  |   |  |                          |   |   | V <sub>F</sub>                                  |                   | 3623            | Exhibit 25-1                           | 4 6780              | No                                 |  |
| $V_{FO}$   |   |  | Exhibit 25-7             |   |   | $V_{FO} = V_{F}$                                | - V <sub>R</sub>  | 2576            | Exhibit 25-1                           | 4 6780              | No                                 |  |
|  |   |  |                          |   |   | V <sub>R</sub>                                  |                   | 1047            | Exhibit 25-3                           | 3 2100              | No                                 |  |
| Flow Ent   | tering Me                               | erge In                                      | fluence A                | rea   |   | Flow En   | terin             | g Dive          | rge Influen                            | ce Area             |                                    |  |
|  |   | ctual  | ľ                        | )esirable   | Violation?  |   | 1                 | Actual          | Max Desiral                            |                     | Violation?                         |  |
| V <sub>R12</sub>   |   |  | Exhibit 25-7             |   |   | V <sub>12</sub>                                 | 2                 | 2647            | Exhibit 25-14                          | 4400:All            | No                                 |  |
| Level of   | Service I                               | Detern                                       | nination (i              | f not F)  |   | Level of  | Serv              | ∕ice De         | terminatio                             | n (if not           | F)                                 |  |
| $D_{R} = 5.47$   | 75 + 0.0073                             | 4 v <sub>R</sub> + (                         | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>                                  |   |   | $O_R = 4$         | .252 + 0        | .0086 V <sub>12</sub> - 0.             | 009 L <sub>D</sub>  |                                    |  |
| D <sub>R</sub> = (                                       | pc/mi/ln)                               |  |                          |   |   | D <sub>R</sub> = 20                             | .9 (pc            | /mi/ln)         |  |                     |                                    |  |
| LOS = (I   | Exhibit 25-                             | 4)   |                          |   |   | LOS = C   | (Exhil            | oit 25-4)       |  |                     |                                    |  |
| Speed D  | etermina                                | tion   |                          |   |   | Speed D   | eter              | minatio         | on                                     |                     |                                    |  |
| M <sub>S</sub> = (E)                                     | xibit 25-19)                            |  |                          |   |   | $D_{S} = 0.4$                                   | 457 (E            | xhibit 25       | -19)                                   |                     |                                    |  |
| _  | h (Exhibit 2                            | 5-19)  |                          |   |   | S <sub>R</sub> = 49                             | .6 mph            | (Exhibit        | 25-19)                                 |                     |                                    |  |
|  | h (Exhibit 2                            |  |                          |   |   |   | .4 mph            | (Exhibit        | 25-19)                                 |                     |                                    |  |
| -  | •                                       | ,  |                          |   |   |   | -                 |                 |  |                     |                                    |  |
| S = mp   | h (Exhibit 2                            | 5-14)  |                          |   |   | S = 52  | .3 mph            | (Exhibit        | 25-15)                                 |                     |                                    |  |

|   |                                  | MPS AND   | NAIVIE JUIN                    |                              |  | <u> </u>                                 |                          |                        |                                      |  |  |
|---|----------------------------------|---|--------------------------------|------------------------------|--|--|--------------------------|------------------------|--------------------------------------|--|--|
| General Infor                                 | mation                           |   |                                | Site Infor                   |  |  |                          |                        |                                      |  |  |
| Analyst                                       | SEB                              |   |                                | reeway/Dir of Tr             |  | Northbound I-8                           |                          |                        |                                      |  |  |
| Agency or Company                             | CHA                              |   |                                | unction                      |  | Exit 4 NB On-F                           | Ramp                     |                        |                                      |  |  |
| Date Performed                                | 02/1!                            | 5/12  |                                | urisdiction                  |  | NYSDOT                                   |                          |                        |                                      |  |  |
| Analysis Time Period                          |                                  |   | A                              | nalysis Year                 |  | 2016 Diamond                             |                          |                        |                                      |  |  |
| Project Description                           | EXIL 4                           |   |                                |                              |  |  |                          |                        |                                      |  |  |
| Inputs  |                                  | Terrain: Level  |                                |                              |  |  |                          |                        |                                      |  |  |
| Jpstream Adj Ramp                             |                                  | Terrain. Lever  |                                |                              |  |  |                          | Downstre<br>Ramp       | eam Adj                              |  |  |
| Yes On  | ı                                |   |                                |                              |  |  |                          | ☐ Yes                  | □ On                                 |  |  |
| □ No     Off                                  | :                                |   |                                |                              |  |  |                          | ✓ No                   | ☐ Off                                |  |  |
| - <sub>up</sub> = 1850                        | ft                               |   |                                |                              |  |  |                          | L <sub>down</sub> =    | ft                                   |  |  |
|   |                                  | S   | $_{\rm F} = 56.0 \; {\rm mph}$ |                              | $S_{FR} = 4$                                     | 10.0 mph                                 |                          | <b>\</b> ,             | / -                                  |  |  |
| $v_{\rm u} = 850 \text{ v}$                   | eh/h                             |   | Sketch (                       | show lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$                              |  |                          | V <sub>D</sub> =       | veh/h                                |  |  |
| Conversion to                                 | pc/h Un                          | der Base C  | onditions                      |                              |  | _  |                          |                        |                                      |  |  |
| (pc/h)  | V<br>(Veh/hr)                    | PHF   | Terrain                        | %Truck                       | %Rv  | $f_{HV}$                                 | f <sub>p</sub>           | v = V/PH               | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway                                       | 2450                             | 0.92  | Level                          | 2                            | 0  | 0.990                                    | 1.00                     |                        | 2690                                 |  |  |
| Ramp  | 560                              | 0.92  | Level                          | 2                            | 0  | 0.990                                    | 1.00                     |                        | 615                                  |  |  |
| UpStream                                      | 850                              | 0.96  | Level                          | 2                            | 0  | 0.990                                    | 1.00                     |                        | 894                                  |  |  |
| DownStream                                    |                                  |   |                                |                              |  |  |                          |                        |                                      |  |  |
|   |                                  | Merge Areas   |                                |                              |  | -  | Diverge Area             | as                     |                                      |  |  |
| Estimation of                                 | v <sub>12</sub>                  |   |                                | Estimat                      | ion of v <sub>12</sub>                           |  |                          |                        |                                      |  |  |
|   | V <sub>12</sub> = V <sub>F</sub> | (P <sub>EM</sub> )  |                                |                              |  | \/                                       | \/ . (\/                 | \/ \D                  |                                      |  |  |
| F0 =  |                                  | •                                   | 5-2 or 25-3)                   |                              |  | V <sub>12</sub>                          | $= V_R + (V_F -$         |                        | - \                                  |  |  |
| -EQ =<br>O _                                  |                                  | 978.71 (Equation 25-2 or 25-3)  0.614 using Equation (Exhibit 25-5)  P=== |                                |                              |  |  |                          | 25-8 or 25-            |                                      |  |  |
| )<br>FM =                                     |                                  |   | ON (EXHIBIT 52-5               | )                            | P <sub>FD</sub> =                                |  | using Equ                | ation (Exhibit         | 25-12)                               |  |  |
| / <sub>12</sub> =                             | 1652                             |   | 05.4.05                        |                              | V <sub>12</sub> =                                |  | pc/h                     |                        |                                      |  |  |
| 1 <sub>3</sub> or V <sub>av34</sub>           | 1038<br><b>5</b> )               | pc/h (Equatio   | n 25-4 or 25-                  |                              | $V_3$ or $V_{av34}$                              |  | pc/h (Equati             | on 25-15 or 2          | 5-16)                                |  |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,70  |                                  | s 🔽 No  |                                |                              | Is V <sub>3</sub> or V <sub>av3</sub>            | <sub>34</sub> > 2,700 pc/h               | ? ☐ Yes ☐                | No                     |                                      |  |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5 * |                                  |   |                                |                              | Is V <sub>3</sub> or V <sub>av</sub>             | <sub>34</sub> > 1.5 * V <sub>12</sub> /2 | ☐ Yes ☐                  | No                     |                                      |  |  |
|   | ·=                               | S M NO<br>(Equation 25-   | 0)                             |                              | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18) |  |                          |                        |                                      |  |  |
| Yes,V <sub>12a</sub> =                        | · ·                              | (Equation 25-   | -0)                            |                              | 120  |  |                          |                        |                                      |  |  |
| Capacity Che                                  | Actual                           | Ca  | pacity                         | LOS F?                       | Capacity Checks   Actual   Capacity LO           |  |                          |                        |                                      |  |  |
|   | Actual                           |   | pacity                         | 1031:                        | V <sub>F</sub>                                   | Actu                                     | Exhibit 2                |                        | LOS F                                |  |  |
|   |                                  |   |                                |                              |  |  | <del></del>              |                        |                                      |  |  |
| $V_{FO}$                                      | 3305                             | Exhibit 25-7  |                                | No                           | $V_{FO} = V_{F}$                                 | - V <sub>R</sub>                         | Exhibit 2                | 25-14                  |                                      |  |  |
|   |                                  |   |                                |                              | V <sub>R</sub>                                   |  | Exhibit 2                | 25-3                   |                                      |  |  |
| Flow Entering                                 | g Merge In                       | · ·   |                                |                              | Flow En  | tering Div                               | verge Influ              |                        |                                      |  |  |
|   | Actual                           |   | esirable                       | Violation?                   |  | Actual                                   |                          | esirable               | Violation                            |  |  |
| V <sub>R12</sub>                              | 2267                             | Exhibit 25-7  | 4600:All                       | No                           | V <sub>12</sub>                                  |  | Exhibit 25-1             | 4                      |                                      |  |  |
| Level of Serv                                 | ice Deterr                       | nination (it  | not F)                         |                              | Level of   | Service I                                | Determina                | tion (if n             | ot F)                                |  |  |
| $D_R = 5.475 +$                               | 0.00734 v <sub>R</sub> + 0       | 0.0078 V <sub>12</sub> - 0.00   | )627 L <sub>A</sub>            |                              |  | $D_R = 4.252 +$                          | + 0.0086 V <sub>12</sub> | - 0.009 L <sub>D</sub> | · ·                                  |  |  |
| $O_{R} = 14.7 \text{ (pc)}$                   | /mi/ln)                          |   |                                |                              | $D_R = (p$                                       | c/mi/ln)                                 |                          |                        |                                      |  |  |
| .OS = B (Exhib                                | it 25-4)                         |   |                                |                              | LOS = (E   | Exhibit 25-4)                            |                          |                        |                                      |  |  |
| Speed Detern                                  | nination                         |   |                                |                              | Speed D  | Determina                                | tion                     |                        |                                      |  |  |
| M <sub>S</sub> = 0.254 (Exil                  | oit 25-19)                       |   |                                |                              | $D_s = (E$                                       | xhibit 25-19)                            |                          |                        |                                      |  |  |
| -   | Exhibit 25-19)                   |   |                                |                              |  | ph (Exhibit 25-                          | 19)                      |                        |                                      |  |  |
| **  | Exhibit 25-17)                   |   |                                |                              | 1  | ,  |                          |                        |                                      |  |  |
| S <sub>0</sub> = 54.1 mph (                   |                                  |   |                                |                              | S = mph (Exhibit 25-15)                          |  |                          |                        |                                      |  |  |
| S = 52.9  mph (                               | EVAINIT 15-1/11                  |   |                                |                              |  |  |                          |                        |                                      |  |  |

|  |                             | RAMPS                    | S AND RAN              | IP JUNCTI   | ONS WO  | RKS                | HEET       |   |                     |                    |  |
|--|-----------------------------|--------------------------|------------------------|---|---|--------------------|------------|---|---------------------|--------------------|--|
| General Infor  | mation                      |                          |                        | Site Infor  |   |                    |            |   |                     |                    |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period         | SEB<br>CHA<br>02/1!<br>I AM |                          | J<br>J                 | reeway/Dir of Tr<br>unction<br>urisdiction<br>Analysis Year | avel [<br>I   | Exit 5 I           |            |   |                     |                    |  |
| Project Description  | Exit 4                      |                          |                        |   |   |                    |            |   |                     |                    |  |
| Inputs   |                             | Itania (                 | 1                      |   |   |                    |            |   |                     |                    |  |
| Upstream Adj Ramp  |                             | Terrain: Leve            |                        |   |   |                    |            |   | Downstrea<br>Ramp   | m Adj              |  |
| ▼ Yes ▼ Or   | 1                           |                          |                        |   |   |                    |            |   |                     | □ On               |  |
| □ No □ Of  | f                           |                          |                        |   |   |                    |            |   | Yes                 |                    |  |
| I NO I OI  | ı                           |                          |                        |   |   |                    |            |   | ™ No                | ☐ Off              |  |
| L <sub>up</sub> = 7810   | ft                          |                          | F/ 0 I                 |   | •   |                    |            |   | L <sub>down</sub> = | ft                 |  |
| $V_u = 560 \text{ V}$  | ≏h/h                        | 5                        | FF = 56.0 mph          | / -h l l  | $S_{FR} = 3$  | 5.0 mp             | n          |   | V <sub>D</sub> =    | veh/h              |  |
|  |                             |                          |                        | ( show lanes, L <sub>A</sub>                                | L <sub>D</sub> ,V <sub>R</sub> ,V <sub>f</sub> )  |                    |            |   |                     |                    |  |
| Conversion t   | o pc/n Und<br>I ∨           | der Base (               | conditions             | 1   | 1   | 1                  |            | <u> </u>  |                     |                    |  |
| (pc/h)   | (Veh/hr)                    | PHF                      | Terrain                | %Truck  | %Rv   |                    | $f_{HV}$   | f <sub>p</sub>  | v = V/PHF           | $x f_{HV} x f_{p}$ |  |
| Freeway  | 2500                        | 0.92                     | Level                  | 2   | 0   | 0                  | 1.00       | 27-   | 45                  |                    |  |
| Ramp   | 490                         | 0.96                     | Level                  | 2   | 0   | 0                  | .990       | 1.00  | 51                  | 6                  |  |
| UpStream   | 560                         | 0.92                     | Level                  | 2   | 0   | 0                  | .990       | 1.00  | 61                  | 5                  |  |
| DownStream   |                             | Merge Areas              |                        |   |   |                    |            | Diverge Areas   |                     |                    |  |
| Estimation of  |                             | Estimati                 | ion c                  |   | Diverge Areas   |                    |            |   |                     |                    |  |
|  |                             | (D)                      |                        |   |   |                    |            | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub>                   | \D                  |                    |  |
| $V_{12} = V_F (P_{FM})$  |                             |                          |                        |   |   |                    |            | - v <sub>R</sub> + (v <sub>F</sub> - v <sub>I</sub><br>479.21 (Equati | `                   | 25.0)              |  |
| $L_{EQ}$ = (Equation 25-2 or 25-3)<br>$P_{EM}$ = using Equation (Exhibit 25-5) |                             |                          |                        |   |   |                    |            |   |                     |                    |  |
| P <sub>FM</sub> =<br>V <sub>12</sub> =   | pc/h                        | Lquation (L              | .XIIIDIL 25-5)         |   | P <sub>FD</sub> =<br>V <sub>12</sub> =  |                    |            | .668 using Eq<br>004 pc/h   | uation (Exil        | IDIL 23-12)        |  |
| V <sub>12</sub> =<br>V <sub>3</sub> or V <sub>av34</sub>                       | •                           | (Equation 25             | -4 or 25-5)            |   | V <sub>12</sub> = V <sub>3</sub> or V <sub>av34</sub>                                       |                    |            | 004 рс/п<br>41 pc/h (Equa   | tion 25-15          | or 25-16\          |  |
| Is $V_3$ or $V_{av34} > 2,70$  |                             |                          | -4 01 23-3)            |   |   | >27                |            | T Yes ☑ No  | 111011 23-13        | 01 25-10)          |  |
| Is $V_3$ or $V_{av34} > 1.5$   |                             |                          |                        |   |   |                    |            |   |                     |                    |  |
| If Yes,V <sub>12a</sub> =  | · <del>-</del>              | (Equation 25             | -8)                    |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No<br>If Yes, $V_{12a} =$ pc/h (Equation 25-18) |                    |            |   |                     |                    |  |
| Capacity Che   |                             | ( 1                      | - /                    |   | Capacity  |                    |            | ( 1   | /                   |                    |  |
|  | Actual                      | C                        | apacity                | LOS F?  |   |                    | Actual     | Ca  | pacity              | LOS F              |  |
|  |                             |                          |                        |   | V <sub>F</sub>  |                    | 2745       | Exhibit 25-1  | 4 6780              | No                 |  |
| $V_{FO}$   |                             | Exhibit 25-7             |                        |   | $V_{FO} = V_{F}$  | - V <sub>R</sub>   | 2229       | Exhibit 25-1  | 4 6780              | No                 |  |
|  |                             |                          |                        |   | V <sub>R</sub>  | - '`               | 516        | Exhibit 25-3  | 2000                | No                 |  |
| Flow Entering  | a Merae In                  | fluence A                | rea                    |   |   | terir              | na Dive    | rge Influen   | ce Area             |                    |  |
|  | Actual                      | 1                        | Desirable Desirable    | Violation?  |   |                    | Actual     | Max Desirat   |                     | Violation          |  |
| V <sub>R12</sub>   |                             | Exhibit 25-7             |                        |   | V <sub>12</sub>   |                    | 2004       | Exhibit 25-14   | 4400:All            | No                 |  |
| Level of Serv  | ice Detern                  | nination (i              | f not F)               |   |   | Ser                | vice De    | eterminatio   | n (if not           | F)                 |  |
| $D_R = 5.475 + 0.1$  | 00734 v <sub>R</sub> +      | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub> |   |   | O <sub>R</sub> = 4 | 4.252 + 0  | ).0086 V <sub>12</sub> - 0.   | 009 L <sub>D</sub>  |                    |  |
| D <sub>R</sub> = (pc/mi/   | ln)                         |                          |                        |   | D <sub>R</sub> = 19   | .2 (pc             | /mi/ln)    |   |                     |                    |  |
| LOS = (Exhib   | t 25-4)                     |                          |                        |   | LOS = B   | (Exhi              | bit 25-4)  |   |                     |                    |  |
| Speed Deterr   | nination                    |                          |                        |   | Speed D   | eter               | minati     | on  |                     |                    |  |
| $M_S = $ (Exibit 2   |                             |                          |                        |   | D <sub>s</sub> = 0.4  | 474 (E             | xhibit 25  | -19)  |                     |                    |  |
|  | ibit 25-19)                 |                          |                        |   | S <sub>R</sub> = 49   | .4 mpł             | n (Exhibit | 25-19)  |                     |                    |  |
|  | ibit 25-19)                 |                          |                        |   |   | .4 mpł             | i (Exhibit | 25-19)  |                     |                    |  |
|  | ,                           |                          |                        |   | S = 52.1 mph (Exhibit 25-15)  |                    |            |   |                     |                    |  |
| S = mph (Exh   | ibit 25-14)                 |                          |                        |   | S = 52  | !.1 mpł            | n (Exhibit | 25-15)  |                     |                    |  |

|  |                              | KAMP                     | S AND RAM   |   |  | NNO                                  | IILLI             |   |                               |                                    |  |
|--|------------------------------|--------------------------|---|---|--|--------------------------------------|-------------------|---|-------------------------------|------------------------------------|--|
| General Info   |                              |                          |   | Site Infor  |  |                                      |                   |   |                               |                                    |  |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric | 02/1                         | ı                        | J   | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year |  | Southb<br>Exit 2V<br>NYSD(<br>2016 F | V Off             |   |                               |                                    |  |
| Project Description  |                              |                          |   | a.yo.o . oa.  | •  | 2010 2                               | , idiniona        |   |                               |                                    |  |
| Inputs   |                              |                          |   |   |  |                                      |                   |   |                               |                                    |  |
| Upstream Adj Ram   | כ                            | Terrain: Leve            | I   |   |  |                                      |                   |   | Downstrea<br>Ramp             | m Adj                              |  |
| ☐ Yes ☐ O  | n                            |                          |   |   |  |                                      |                   |   | ✓ Yes                         | <b>☑</b> On                        |  |
| ™ No □ O   | ff                           |                          |   |   |  |                                      |                   |   | □ No                          | ☐ Off                              |  |
| L <sub>up</sub> = ft   |                              | S                        | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$ |   |  |                                      |                   |   |                               | 1300 ft                            |  |
| V <sub>u</sub> = veh/  |                              |                          | Sketch (  | show lanes, L <sub>A</sub>                                  |  |                                      |                   |   | V <sub>D</sub> =              | 340 veh/l                          |  |
| Conversion   |                              | der Base (               | Conditions  |   | 1  | ,                                    |                   |   |                               |                                    |  |
| (pc/h)   | V<br>(Veh/hr)                | PHF                      | Terrain   | %Truck  | %Rv  |                                      | f <sub>HV</sub>   | f <sub>p</sub>                                      | v = V/PHF                     | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 5200                         | 0.92                     | Level   | 2   | 0 0.990 1.00   |                                      |                   |   | 570                           | )9                                 |  |
| Ramp   | 930                          | 0.92                     | Level   | 2   | 0  | 0                                    | .990              | 1.00  | 102                           | 21                                 |  |
| UpStream   |                              |                          |   |   |  | +                                    |                   |   |                               |                                    |  |
| DownStream   | 340                          | 0.92                     | Level   | 2   | 0  | 0                                    | .990              | 1.00  | 37                            | 3                                  |  |
| Estimation a   |                              | Merge Areas              |   |   | Estimati   | ion                                  |                   | Diverge Areas                                       |                               |                                    |  |
| Estimation of v <sub>12</sub>  |                              |                          |   |   |  | ion c                                |                   |   |                               |                                    |  |
| $V_{12} = V_F (P_{FM})$  |                              |                          |   |   |  |                                      | V <sub>12</sub> = | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | <sub>R</sub> )P <sub>FD</sub> |                                    |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                            |                              |                          |   |   |  |                                      | (                 | Equation 25-8                                       | 3 or 25-9)                    |                                    |  |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)                      |                              |                          |   |   |  |                                      | 0                 | .570 using Ed                                       | <b>juation</b> (Exhi          | bit 25-12)                         |  |
| V <sub>12</sub> =  | pc/h                         |                          |   |   | P <sub>FD</sub> =<br>V <sub>12</sub> =   |                                      | 3                 | 695 pc/h  |                               |                                    |  |
| V <sub>3</sub> or V <sub>av34</sub>                                  | pc/h                         | (Equation 25             | -4 or 25-5)   |   | V <sub>3</sub> or V <sub>av34</sub>  |                                      | 2                 | 014  pc/h (Equ                                      | ation 25-15                   | or 25-16                           |  |
| Is $V_3$ or $V_{av34} > 2.7$   |                              |                          | ,   |   |  | , > 2,7                              |                   | Tyes ✓ No   |                               |                                    |  |
| Is $V_3$ or $V_{av34} > 1.5$   |                              |                          |   |   |  |                                      |                   |   |                               |                                    |  |
| If Yes,V <sub>12a</sub> =  | · <del>=</del>               | (Equation 25             | (-8)  |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No<br>If Yes, $V_{12a} = $ pc/h (Equation 25-18) |                                      |                   |   |                               |                                    |  |
| Capacity Ch  |                              | (Equation 20             |   |   | Capacity   |                                      |                   | John (Equation                                      | 120 10)                       |                                    |  |
| Capacity Cit   | Actual                       | T                        | apacity   | LOS F?  | Capacity   | y Cii                                | Actual            | Ca  | pacity                        | LOS F                              |  |
|  | Actual                       | <del>  ĭ</del>           | арасну  | 1031:   | V <sub>F</sub>   |                                      | 5709              | Exhibit 25-1  | · ·                           | No                                 |  |
| .,,  |                              | E 1 11 11 0E 7           |   |   | $\vdash$   |                                      |                   |   |                               | +                                  |  |
| V <sub>FO</sub>  |                              | Exhibit 25-7             |   |   | $V_{FO} = V_{F}$   | - v <sub>R</sub>                     | 4688              | Exhibit 25-1  | <del>-</del>                  | No                                 |  |
|  |                              |                          |   |   | V <sub>R</sub>   |                                      | 1021              | Exhibit 25-3  | 3 2100                        | No                                 |  |
| Flow Enterin   | g Merge In                   | ifluence A               | rea   |   | Flow En  | terir                                | ng Dive           | rge Influen   | ce Area                       |                                    |  |
|  | Actual                       | 1                        | Desirable   | Violation?  |  | $\bot$                               | Actual            | Max Desirat   | ole                           | Violation                          |  |
| V <sub>R12</sub>   |                              | Exhibit 25-7             |   |   | V <sub>12</sub>  |                                      | 3695              | Exhibit 25-14                                       | 4400:All                      | No                                 |  |
| Level of Ser   | vice Deterr                  | mination (i              | f not F)  |   | Level of   | Ser                                  | vice De           | terminatio  | n (if not l                   | <del>-</del> )                     |  |
| $D_R = 5.475 + 0$  | 0.00734 v <sub>R</sub> +     | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>                                  |   |  | D <sub>R</sub> = 4                   | 4.252 + 0         | .0086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>            |                                    |  |
| D <sub>R</sub> = (pc/m   | i/ln)                        | · <b>-</b>               |   |   | D <sub>R</sub> = 33  | 8.3 (pc                              | :/mi/ln)          | · <del>-</del>                                      | _                             |                                    |  |
| LOS = (Exhib   | oit 25-4)                    |                          |   |   | LOS = D  | (Exhi                                | bit 25-4)         |   |                               |                                    |  |
| Speed Deter  |                              |                          |   |   | Speed D  | •                                    |                   | on  |                               |                                    |  |
| •  |                              |                          |   |   | <del>'                                    </del>   |                                      | xhibit 25         |   |                               |                                    |  |
| $M_S = (Exibit 2)$   |                              |                          |   |   |  | ,                                    | n (Exhibit        | *   |                               |                                    |  |
|  | hibit 25-19)                 |                          |   |   |  | -                                    |                   |   |                               |                                    |  |
|  | hibit 25-19)<br>hibit 25-14) |                          |   |   | 1.   | -                                    | n (Exhibit        |   |                               |                                    |  |
| S = mph (Ex  | DIDIT 16 1/1                 |                          |   |   | IN _ F1  | 17 mnl                               | الأحالحان الم     | 25-15)  |                               |                                    |  |

| General In Analyst Agency or Comp Date Performed Analysis Time P | <b>formation</b> SEB             |                          | S AND RAM   |   |  |                  |                                       |   |                        |                                    |  |
|--|----------------------------------|--------------------------|---|---|--|------------------|---------------------------------------|---|------------------------|------------------------------------|--|
| Agency or Comp<br>Date Performed                                 | SEB                              |                          |   | Site Infor  | mation   |                  |                                       |   |                        |                                    |  |
|  | 02/15<br>Period AM               |                          | Ju<br>Ju  | eeway/Dir of Tr<br>inction<br>irisdiction<br>nalysis Year | avel   | Exit 4<br>NYSD   | oound I-87<br>SB Off<br>OT<br>Diamond |   |                        |                                    |  |
| Project Descripti  | ion Exit 4                       |                          |   |   |  |                  |                                       |   |                        |                                    |  |
| Inputs   |                                  | Terrain: Leve            | <u> </u>  |   |  |                  |                                       |   | D                      | A .I:                              |  |
| Upstream Adj Ra  | amp<br>On                        |                          | •   |   |  |                  |                                       |   | Downstrea<br>Ramp      | •                                  |  |
|  | Off                              |                          |   |   |  |                  |                                       |   | ✓ Yes                  | ☑ On                               |  |
| 140  | Oli                              |                          |   |   |  |                  |                                       |   | No L <sub>down</sub> = | ☐ Off                              |  |
| L <sub>up</sub> = ft   | t                                | <u> </u>                 | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$ |   |  |                  |                                       |   |                        | 1820 ft                            |  |
| $V_u = v\epsilon$  | eh/h                             |                          | • •   | show lanes, L <sub>A</sub>                                |  | 10.0 111         | νii                                   |   | V <sub>D</sub> =       | 510 veh/h                          |  |
| Conversio  | n to pc/h Und                    | der Base (               | Conditions  | •   |  |                  |                                       |   |                        |                                    |  |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                      | Terrain   | %Truck  | %Rv  |                  | f <sub>HV</sub>                       | f <sub>p</sub>                                      | v = V/PHF              | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 5350                             | 0.92                     | Level   | 2   | 0 0.990 1.00   |                  |                                       |   | 58                     | 373                                |  |
| Ramp   | 630                              | 0.92                     | Level   | 2   | 0 0.990 1.00   |                  |                                       |   | 6                      | 92                                 |  |
| UpStream<br>DownStream   | F10                              | 0.02                     | Laval   | -   |  | +                | .976                                  | 1.00  |                        | (2)                                |  |
| Downsteam  | 510                              | 0.93<br>Merge Areas      | Level   | 5   | 0  | 5                | 62                                    |   |                        |                                    |  |
| Estimation   |                                  |                          | Estimat   | ion (   |  | Diverge Areas    |                                       |   |                        |                                    |  |
|  | V <sub>12</sub> = V <sub>F</sub> | (P)                      |   |   |  |                  |                                       | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> |                        |                                    |  |
| L <sub>EO</sub> = (Equation 25-2 or 25-3)                        |                                  |                          |   |   |  |                  |                                       | Equation 25-8                                       |                        |                                    |  |
| $P_{FM} = $ using Equation (Exhibit 25-5)                        |                                  |                          |   |   |  |                  |                                       | 581 using Eq  |                        | nihit 25-12)                       |  |
| V <sub>12</sub> =  | pc/h                             | Lqualion (E              | -XIII 20 0)   |   | P <sub>FD</sub> = V <sub>12</sub> =  |                  |                                       | 704 pc/h  | dation (Exi            | IIDI( 25-12)                       |  |
| V <sub>3</sub> or V <sub>av34</sub>                              | •                                | (Equation 25             | i-4 or 25-5)  |   | V <sub>3</sub> or V <sub>av34</sub>  |                  |                                       | 169  pc/h (Equ                                      | ation 25-1             | 5 or 25-16                         |  |
|  | 2,700 pc/h?                      |                          | ,   |   |  | > 2.             |                                       | Yes 🗹 No  | 01101120 1             | 0 01 20 10                         |  |
|  | 1.5 * V <sub>12</sub> /2  Yes    |                          |   |   |  |                  |                                       |   |                        |                                    |  |
| If Yes,V <sub>12a</sub> =  | : <del>-</del>                   | Equation 25              | i-8)  |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No<br>If Yes, $V_{12a} = $ pc/h (Equation 25-18) |                  |                                       |   |                        |                                    |  |
| Capacity C   |                                  | ( 1                      | - /   |   | Capacit  |                  |                                       | . (   | ,                      |                                    |  |
|  | Actual                           | C                        | apacity   | LOS F?  | 10 11/2 11011  |                  | Actual                                | Ca  | pacity                 | LOS F                              |  |
|  |                                  |                          | -   |   | V <sub>F</sub>   |                  | 5873                                  | Exhibit 25-1  | 4 6780                 | No                                 |  |
| $V_{FO}$   |                                  | Exhibit 25-7             |   |   | $V_{FO} = V_{F}$   | - V <sub>R</sub> | 5181                                  | Exhibit 25-1  | 4 6780                 | No                                 |  |
|  |                                  |                          |   |   | V <sub>R</sub>   |                  | 692                                   | Exhibit 25-3  | 3 2100                 | No                                 |  |
| Flow Enter   | ring Merge In                    | fluence A                | rea   |   |  | terii            | na Dive                               | rge Influen   | ce Area                |                                    |  |
| 77011 =1110  | Actual                           | 1                        | Desirable   | Violation?  |  | T                | Actual                                | Max Desiral   |                        | Violation                          |  |
| V <sub>R12</sub>   |                                  | Exhibit 25-7             |   |   | V <sub>12</sub>  |                  | 3704                                  | Exhibit 25-14                                       | 4400:All               | No                                 |  |
| Level of S   | ervice Detern                    | nination (i              | if not F)   |   | Level of   | Ser              | vice De                               | terminatio  | n (if not              | <b>F</b> )                         |  |
| D <sub>R</sub> = 5.475   | + 0.00734 v <sub>R</sub> +       | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>                                  |   |  | D <sub>R</sub> = | 4.252 + 0                             | .0086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>     |                                    |  |
| D <sub>R</sub> = (pc   | :/mi/ln)                         |                          |   |   | $D_R = 29$   | 9.8 <b>(</b> pc  | c/mi/ln)                              |   |                        |                                    |  |
| LOS = (Ex  | khibit 25-4)                     |                          |   |   | LOS = D  | (Exh             | bit 25-4)                             |   |                        |                                    |  |
| Speed Det  | termination                      |                          |   |   | Speed L  | )ete             | rminatio                              | on  |                        |                                    |  |
| M <sub>S</sub> = (Exib   | oit 25-19)                       |                          |   |   | D <sub>s</sub> = 0.  | 425 <b>(E</b>    | xhibit 25                             | -19)  |                        |                                    |  |
| _  | (Exhibit 25-19)                  |                          |   |   | $S_R = 50$   | ).0 mp           | h (Exhibit                            | 25-19)  |                        |                                    |  |
|  | (Exhibit 25-19)                  |                          |   |   | $S_0 = 56$   | 5.9 mp           | h (Exhibit                            | 25-19)  |                        |                                    |  |
|  | (Exhibit 25-14)                  |                          |   |   | S = 52   | 2.4 mp           | h (Exhibit                            | 25-15)  |                        |                                    |  |
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|                                   | RAI                                       | MPS AND                       | RAMP JUNG                | CHONS W                      | ORKSHE                               | <u>:EI</u>             |                          |                        |                                |
|-----------------------------------|---|-------------------------------|--------------------------|------------------------------|--------------------------------------|------------------------|--------------------------|------------------------|--------------------------------|
| General Infor                     | mation                                    |                               |                          | Site Infor                   | mation                               |                        |                          |                        |                                |
| Analyst                           | SEB                                       |                               | Fre                      | eeway/Dir of Tra             | avel                                 | Southbound I-8         | 37                       |                        |                                |
| gency or Company                  | CHA                                       |                               | Ju                       | nction                       | İ                                    | Exit 4 SB On-F         | Ramp                     |                        |                                |
| ate Performed                     | 02/1!                                     | 5/12                          | Ju                       | risdiction                   |                                      | NYSDOT                 |                          |                        |                                |
| nalysis Time Period               | l AM                                      |                               | An                       | nalysis Year                 | :                                    | 2016 Diamond           |                          |                        |                                |
| roject Description                | Exit 4                                    |                               |                          |                              |                                      |                        |                          |                        |                                |
| nputs                             |   | 1                             |                          |                              |                                      |                        |                          | 1                      |                                |
| pstream Adj Ramp                  |   | Terrain: Level                |                          |                              |                                      |                        |                          | Downstre<br>Ramp       | eam Adj                        |
| Yes On                            | l   |                               |                          |                              |                                      |                        |                          | ☐ Yes                  | □ On                           |
| No ✓ Off                          | f   |                               |                          |                              |                                      |                        |                          | ☑ No                   | ☐ Off                          |
| up = 1820                         | ft  |                               | F/ 0 mmh                 |                              | <u> </u>                             | 0.0 mmh                |                          | L <sub>down</sub> =    | ft                             |
| $v_{u} = 630 \text{ v}$           | ah/h                                      | 5                             | <sub>=F</sub> = 56.0 mph |                              | $S_{FR} = 4$                         | u.u mpn                |                          | V <sub>D</sub> =       | veh/h                          |
|                                   |   |                               |                          | show lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$                  |                        |                          |                        |                                |
| Conversion to                     | p pc/h Un                                 | der Base C                    | Conditions               |                              | _                                    |                        |                          |                        |                                |
| (pc/h)                            | V<br>(Veh/hr)                             | PHF                           | Terrain                  | %Truck                       | %Rv                                  | ${\sf f}_{\sf HV}$     | fp                       | v = V/PH               | $F \times f_{HV} \times f_{p}$ |
| reeway                            | 4700                                      | 0.92                          | Level                    | 2                            | 0                                    | 0.990                  | 1.00                     |                        | 5160                           |
| Ramp                              | 510                                       | 0.93                          | Level                    | 5                            | 0                                    | 0.976                  | 1.00                     |                        | 562                            |
| JpStream .                        | 630                                       | 0.92                          | Level                    | 2                            | 0                                    | 0.990                  | 1.00                     |                        | 692                            |
| DownStream                        |   | 1                             |                          |                              |                                      | 1                      | 1                        |                        |                                |
|                                   |   | Merge Areas                   |                          |                              |                                      |                        | Diverge Are              | as                     |                                |
| stimation of                      | v <sub>12</sub>                           |                               |                          |                              | Estimati                             | ion of v <sub>12</sub> |                          |                        |                                |
|                                   | V <sub>12</sub> = V <sub>F</sub>          | (P <sub>514</sub> )           |                          |                              |                                      |                        | M . (M                   | \/ \D                  |                                |
| _                                 | 12 1                                      | (Equation 2                   | 05 2 or 25 2)            |                              |                                      | V <sub>12</sub>        | $= V_R + (V_F - V_F)$    |                        |                                |
| EQ =                              |   |                               |                          |                              | L <sub>EQ</sub> =                    |                        | n 25-8 or 25-9)          |                        |                                |
| FM =                              |   |                               | on (Exhibit 25-5)        |                              | P <sub>FD</sub> =                    | ation (Exhibit         | t 25-12)                 |                        |                                |
| 12 =                              | 3168                                      |                               |                          | V <sub>12</sub> =            |                                      | pc/h                   |                          |                        |                                |
| <sub>3</sub> or V <sub>av34</sub> | 1992 pc/h (Equation 25-4 or 25-           |                               |                          |                              | $V_3$ or $V_{av34}$                  |                        | pc/h (Equat              | ion 25-15 or 2         | 5-16)                          |
|                                   | 5)  |                               |                          |                              |                                      | > 2.700 pc/h           | ? ☐ Yes ☐                |                        | •                              |
| s $V_3$ or $V_{av34} > 2,70$      |   |                               |                          |                              |                                      |                        | □ Yes □                  |                        |                                |
| s $V_3$ or $V_{av34} > 1.5$ *     |   |                               |                          |                              | If Yes, V <sub>12a</sub> =           |                        |                          |                        |                                |
| Yes,V <sub>12a</sub> =            | pc/h                                      | (Equation 25-                 | ·8)                      |                              | 120                                  |                        | pc/ii (⊏qu               | ation 25-18)           |                                |
| Capacity Che                      | cks                                       |                               |                          |                              | Capacity                             | y Checks               |                          |                        |                                |
|                                   | Actual                                    | Ca                            | pacity                   | LOS F?                       |                                      | Actu                   | al                       | Capacity               | LOS F?                         |
|                                   |   |                               |                          |                              | V <sub>F</sub>                       |                        | Exhibit                  | 25-14                  |                                |
| $V_{FO}$                          | 5722                                      | Exhibit 25-7                  |                          | No                           | $V_{FO} = V_{F}$                     | - V <sub>D</sub>       | Exhibit                  | 25-14                  |                                |
| - FO                              | 0722                                      | Exilion 20 7                  |                          | 110                          |                                      | - K                    | Exhibit                  | _                      | _                              |
|                                   | <u> </u>                                  | <u></u>                       |                          |                              | V <sub>R</sub>                       |                        |                          |                        |                                |
| low Entering                      |   | T .                           |                          |                              | Flow En                              |                        | erge Influ               |                        |                                |
| .,                                | Actual                                    | 1                             | esirable                 | Violation?                   | <del> </del>                         | Actual                 |                          | Desirable              | Violation?                     |
| V <sub>R12</sub>                  | 3730                                      | Exhibit 25-7                  | 4600:All                 | No                           | V <sub>12</sub>                      |                        | Exhibit 25-1             |                        |                                |
| evel of Serv                      |   |                               |                          |                              | Level of                             | Service I              | Determina                | tion (if n             | ot F)                          |
| $D_R = 5.475 +$                   | 0.00734 v <sub>R</sub> + 0                | 0.0078 V <sub>12</sub> - 0.00 | 0627 L <sub>A</sub>      |                              |                                      | $O_R = 4.252 -$        | - 0.0086 V <sub>12</sub> | - 0.009 L <sub>D</sub> |                                |
| <sub>R</sub> = 26.1 (pc           | /mi/ln)                                   |                               |                          |                              | $D_R = (p)$                          | c/mi/ln)               |                          |                        |                                |
| OS = C (Exhib                     | oit 25-4)                                 |                               |                          |                              |                                      | xhibit 25-4)           |                          |                        |                                |
| Speed Detern                      | · ·                                       |                               |                          |                              | `                                    | Petermina              | tion                     |                        |                                |
| POGG BOTOLI                       |   |                               |                          |                              |                                      | xhibit 25-19)          |                          |                        |                                |
|                                   | oit 25-19)                                |                               |                          |                              | 3                                    |                        | 10)                      |                        |                                |
| -                                 | S <sub>R</sub> = 50.7 mph (Exhibit 25-19) |                               |                          |                              | S <sub>R</sub> = mph (Exhibit 25-19) |                        |                          |                        |                                |
| 3                                 | (Exhibit 25-19)                           |                               |                          |                              | ., .                                 |                        |                          |                        |                                |
| R= 50.7 mph (                     | (Exhibit 25-19)<br>(Exhibit 25-19)        |                               |                          |                              | ., .                                 | oh (Exhibit 25-        |                          |                        |                                |

|  |                              | MPS AND                      |                          |  |  | <u>. L I                                  </u>            |                       |  |                                       |
|--|------------------------------|------------------------------|--------------------------|--|--|---|-----------------------|--|---------------------------------------|
| General Info   | rmation                      |                              |                          | Site Infor   | mation   |   |                       |  |                                       |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric | 02/15                        |                              | Ju<br>Ju                 | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | E<br>N   | Southbound I-<br>Exit 5 SB On-F<br>NYSDOT<br>2016 Diamond | Ramp                  |  |                                       |
| Project Description  | Exit 4                       |                              |                          |  |  |   |                       |  |                                       |
| nputs  |                              |                              |                          |  |  |   |                       |  |                                       |
| Jpstream Adj Ramı  |                              | Terrain: Level               |                          |  |  |   |                       | Downstr<br>Ramp                        | eam Adj                               |
| □ Yes □ O  |                              |                              |                          |  |  |   |                       | ✓ Yes                                  | □ On                                  |
| ™ No □ O   | ff                           |                              |                          |  |  |   |                       | □ No                                   | ✓ Off                                 |
| ${up} = ft$ $/_{u} = veh/$   | h                            | S                            | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 40                                     | 0.0 mph   |                       | L <sub>down</sub> = V <sub>D</sub> =   | 6100 ft<br>630 veh/h                  |
|  |                              | <u> </u>                     |                          | show lanes, L <sub>A</sub>                             | $L_{D}, V_{R}, V_{f}$                                    |   |                       |  |                                       |
| Conversion   | 1                            | der Base (                   | conditions               | <u> </u>   | 1  | Γ   |                       |  |                                       |
| (pc/h)   | V<br>(Veh/hr)                | PHF                          | Terrain                  | %Truck   | %Rv  | f <sub>HV</sub>   | f <sub>p</sub>        | v = V/PH                               | IF x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 5100                         | 0.92                         | Level                    | 2  | 0  | 0.990   | 1.00                  |  | 5599                                  |
| Ramp   | 250                          | 0.93                         | Level                    | 3  | 0  | 0.985   | 1.00                  |  | 273                                   |
| UpStream   | 100                          |                              |                          |  |  |   | 1                     |  |                                       |
| DownStream   | 630                          | 0.92                         | Level                    | 2  | 0  | 0.990   | 1.00                  | \                                      | 692                                   |
| Estimation o   |                              | Merge Areas                  |                          |  | Ectimati   | on of v <sub>12</sub>                                     | Diverge A             | Areas                                  |                                       |
| -Sumation o  |                              |                              |                          |  | ESuman   | 011 01 V <sub>12</sub>                                    |                       |  |                                       |
|  | $V_{12} = V_F$               | (P <sub>FM</sub> )           |                          |  |  | V <sub>12</sub>   | = V <sub>R</sub> + (V | F - V <sub>R</sub> )P <sub>FD</sub>    |                                       |
| -EQ =  | 2782.47                      | (Equation                    | 25-2 or 25-3)            |  | L <sub>EQ</sub> =  | 12  |                       | on 25-8 or 25                          | -9)                                   |
| P <sub>FM</sub> =  | 0.614                        | using Equati                 | on (Exhibit 25-5)        |  | P <sub>FD</sub> =  | using Equation (Exhibit 25-12)                            |                       |  |                                       |
| / <sub>12</sub> =  | 3437                         | pc/h                         |                          |  | V <sub>12</sub> =  |   | pc/h                  | qua (=                                 | 20 .2,                                |
| / <sub>3</sub> or V <sub>av34</sub>                                  | 2162                         | pc/h (Equatio                | n 25-4 or 25-            |  | V <sub>12</sub> –<br>V <sub>3</sub> or V <sub>av34</sub> |   | -                     | uation 25-15 or 2                      | 5 16)                                 |
|  | 5)                           |                              |                          |  |  | > 2.700 pc/b  |                       |  | 5-10)                                 |
| Is $V_3$ or $V_{av34} > 2.7$   |                              |                              |                          |  |  | 4 > 2,700 pc/h  |                       |  |                                       |
| Is $V_3$ or $V_{av34} > 1.5$   | * V <sub>12</sub> /2         | s 🗹 No                       |                          |  |  | <sub>4</sub> > 1.5 * V <sub>12</sub> /2                   |                       |  |                                       |
| Yes,V <sub>12a</sub> =   | pc/h                         | (Equation 25                 | -8)                      |  | If Yes,V <sub>12a</sub> =                                |   | pc/h (Ed              | quation 25-18                          | )                                     |
| Capacity Ch  | ecks                         |                              |                          |  | Capacity   | / Checks  |                       |  |                                       |
|  | Actual                       | Ca                           | apacity                  | LOS F?   |  | Actu  | ıal                   | Capacity                               | LOS F                                 |
|  |                              |                              |                          |  | V <sub>F</sub>   |   | Exhi                  | bit 25-14                              |                                       |
| $V_{FO}$   | 5872                         | Exhibit 25-7                 |                          | No   | $V_{FO} = V_{F}$   | · V <sub>D</sub>  | Exhi                  | bit 25-14                              |                                       |
| FO   |                              |                              |                          |  | V <sub>R</sub>   | K   | _                     | bit 25-3                               | _                                     |
| Tlavy Entarin  | a Maraa In                   | fluores A                    |                          |  | <i>-</i>   | tarina Di   |                       |  |                                       |
| Flow Enterin   | _                            |                              | <b>rea</b><br>Desirable  | Violation?   | FIOW EIT   |   |                       | fluence Are<br>x Desirable             | Violation?                            |
| V  | Actual<br>3710               | Exhibit 25-7                 | 4600:All                 | Violation?<br>No                                       | V  | Actual  | Exhibit 2             |  | vioid(IUI1?                           |
| V <sub>R12</sub>   |                              |                              |                          | INU  | V <sub>12</sub>  | Comitee   |                       |  | 1 Ct F                                |
| Level of Serv  |                              | <u>-</u>                     |                          |  |  |   |                       | nation (if n                           | ot F)                                 |
| •                              | + 0.00734 v <sub>R</sub> + ( | υ.υυ/8 V <sub>12</sub> - 0.0 | uoz/ L <sub>A</sub>      |  |  |   | + U.UU86 V            | ′ <sub>12</sub> - 0.009 L <sub>D</sub> |                                       |
| IX .   | c/mi/ln)<br>ibit 25-4)       |                              |                          |  | "  | c/mi/ln)<br>xhibit 25-4)                                  |                       |  |                                       |
|  |                              |                              |                          |  | ,  |   | tion                  |  |                                       |
| Speed Deter  |                              |                              |                          |  |  | etermina  | uon                   |  |                                       |
| $M_{S} = 0.376 (E)$  | ribit 25-19)                 |                              |                          |  | 3  | (hibit 25-19)   |                       |  |                                       |
|  | (Exhibit 25-19)              |                              |                          |  | S <sub>R</sub> = mp                                      | h (Exhibit 25-  | 19)                   |  |                                       |
| $S_{R}$ = 50.7 mph   | (Extribit 20 17)             |                              |                          |  |  |   |                       |  |                                       |
|  | (Exhibit 25-19)              |                              |                          |  |  | h (Exhibit 25-  | 19)                   |  |                                       |

|  |   |                            | FREEWA                | Y WEAV  | ING WOR  | KSHEE          | Т   |                   |              |  |
|--|---|----------------------------|-----------------------|---|--|----------------|---|-------------------|--------------|--|
| General  | Informat  | ion                        |                       |   | Site Info  | rmation        |   |                   |              |  |
| Analyst SEB Agency/Company CHA Date Performed 02/15/12 Analysis Time Period AM |   |                            |                       | Weaving Seg Location Exit 2  Jurisdiction NYS |  |                | Northbound<br>2E on to 2W off<br>DOT<br>Diamond |                   |              |  |
| Inputs   |   |                            |                       |   | •  |                |   |                   |              |  |
| Weaving nu   | e-flow speed,<br>mber of lanes,<br>g length, L (ft) | 11                         | 56<br>4<br>815<br>Lev |   | Weaving type<br>Volume ratio, VR<br>Weaving ratio, R |                |   | A<br>0.27<br>0.31 |              |  |
| Convers  | sions to p  | c/h Unde                   | r Base C              | ondition                                      | าร   |                |   |                   | _            |  |
| (pc/h)   | V   | PHF                        | Truck %               | RV %  | E <sub>T</sub>                                       | E <sub>R</sub> | $f_{HV}$  | fp                | V            |  |
| $V_{o1}$   | 2600  | 0.92                       | 2                     | 0   | 1.5  | 1.2            | 0.990   | 1.00              | 2854         |  |
| $V_{o2}$   | 0   | 0.92                       | 2                     | 0   | 1.5  | 1.2            | 0.990   | 1.00              | 0            |  |
| $V_{w1}$   | 660   | 0.92                       | 2                     | 0   | 1.5  | 1.2            | 0.990   | 1.00              | 724          |  |
| $V_{w2}$   | 300   | 0.92                       | 2                     | 0   | 1.5  | 1.2            | 0.990   | 1.00              | 329          |  |
| V <sub>w</sub>   | <u> </u>  |                            |                       | 1053  | $V_{nw}$   |                | •   | Ņ                 | 2854         |  |
| V  | 1   |                            |                       |   | ,  | ı              |   |                   | 3907         |  |
| Weaving  | g and No  | n-Weavin                   | g Speeds              | 3   |  |                |   |                   |              |  |
|  |   |                            | Unconstr              |   |  |                |   | trained           |              |  |
| - /F.,hihik 0./  | . ()  | Weaving                    |                       |   | ving (i = nw)  | Weavir         | ng (i = w)                                      | Non-Wea           | ving ( = nw) |  |
| a (Exhibit 24<br>b (Exhibit 24   |   | 0.15<br>2.20               |                       |   | .00  |                |   |                   |              |  |
| c (Exhibit 24  |   | 0.97                       |                       | <del>}</del>                                  | .30  |                |   | 1                 |              |  |
| d (Exhibit 24  |   | 0.80                       |                       | <del>}</del>                                  | .75  |                |   | 1                 |              |  |
| Weaving intensi  |   | 0.94                       |                       | 0.  | .46  |                |   |                   |              |  |
| Weaving and no<br>speeds, Si (mi/h   |   | 38.6                       | 5                     | 46  | .52  |                |   |                   |              |  |
| Number of I  | anes required                                       | for unconstrair            | ned operation,        | Nw  | 1.36   |                |   |                   |              |  |
| 1  | umber of lanes                                      | , ,                        |                       | :   | 1.40   | ■ :€ NI NI     | ()  |                   | ·            |  |
|  |   | (max) uncons               |                       |   | f Service,   |                | v (max) consti                                  | rained operali    | on           |  |
|  |   |                            |                       | 44.10   | i Service,   | anu Cap        | Jacity  |                   |              |  |
| Weaving segment speed, S (mi/h) Weaving segment density, D (pc/mi/ln)          |   |                            | 22.15                 |   |  |                |   |                   |              |  |
| Level of service, LOS  |   |                            | C C                   |   |  |                |   |                   |              |  |
|  | base condition                                      | n, c <sub>h</sub> (pc/h)   |                       | 6357  |  |                |   |                   |              |  |
|  |   | ow rate, c (veh            | n/h)                  | 6294  |  |                |   |                   |              |  |
|  |   | ume, c <sub>h</sub> (veh/h |                       | 5790  |  |                |   |                   |              |  |
| Notes  |   |                            |                       |   |  |                |   |                   |              |  |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  |   |                          | FREEWA                | Y WEAV  | ING WOR  | KSHEE          | Т   |                   |              |  |
|--|---|--------------------------|-----------------------|---|--|----------------|---|-------------------|--------------|--|
| General  | Informat  | ion                      |                       |   | Site Info  | rmation        |   |                   |              |  |
| Analyst SEB Agency/Company CHA Date Performed 02/15/12 Analysis Time Period AM |   |                          |                       | Weaving Seg Location Exit 2  Jurisdiction NYS |  |                | Southbound<br>2W on to 2E off<br>DOT<br>Diamond |                   |              |  |
| Inputs   |   |                          |                       |   |  |                |   |                   |              |  |
| Weaving nu<br>Weaving se<br>Terrain  | e-flow speed,<br>mber of lanes,<br>g length, L (ft) | N                        | 56<br>4<br>810<br>Lev | el  | Weaving type<br>Volume ratio, VR<br>Weaving ratio, R |                |   | A<br>0.23<br>0.32 |              |  |
| Convers  | sions to p  | oc/h Unde                | er Base C             | ondition                                      | 1  | r              |   | î                 |              |  |
| (pc/h)   | V   | PHF                      | Truck %               | RV %  | E <sub>T</sub>                                       | E <sub>R</sub> | f <sub>HV</sub>                                 | fp                | V            |  |
| $V_{o1}$   | 3530  | 0.92                     | 2                     | 0   | 1.5  | 1.2            | 0.990   | 1.00              | 3875         |  |
| $V_{o2}$   | 0   | 0.92                     | 2                     | 0   | 1.5  | 1.2            | 0.990   | 1.00              | 0            |  |
| $V_{w1}$   | 720   | 0.92                     | 2                     | 0   | 1.5  | 1.2            | 0.990   | 1.00              | 790          |  |
| $V_{w2}$   | 340   | 0.92                     | 2                     | 0   | 1.5  | 1.2            | 0.990   | 1.00              | 373          |  |
| V <sub>w</sub>   | 1   | ,                        | •                     | 1163  | $V_{nw}$   |                | •   | Ņ                 | 3875         |  |
| V  | 7   |                          |                       |   | ,  | ı              |   |                   | 5038         |  |
| Weaving  | g and No  | n-Weavin                 | g Speeds              | 3   |  |                |   |                   |              |  |
|  |   |                          | Unconstr              |   |  |                |   | trained           |              |  |
| o /Fubibit 0   | 1.()  | Weaving                  |                       |   | ving (i = nw)  | Weavir         | ng (i = w)                                      | Non-Wea           | ving ( = nw) |  |
| a (Exhibit 24<br>b (Exhibit 24   |   | 0.15<br>2.20             |                       |   | .00  |                |   |                   |              |  |
| c (Exhibit 24  |   | 0.97                     |                       | <u> </u>                                      | .30  |                |   | 1                 |              |  |
| d (Exhibit 24  |   | 0.80                     |                       |   | .75  |                |   | 1                 |              |  |
| Weaving intensi  | ty factor, Wi                                       | 1.13                     | 3                     | 0   | .57  |                |   |                   |              |  |
| Weaving and no<br>speeds, Si (mi/h   |   | 36.5                     | 5                     | 44  | .35  |                |   |                   |              |  |
| Number of I  | anes required                                       |                          | ned operation,        | Nw  | 1.27   |                |   | ļ.                |              |  |
| 1  | umber of lanes                                      | , ,                      |                       | :   | 1.40   | ■ :€ NI NI     | ()  |                   | ·            |  |
|  | If Nw < Nw  | · · ·                    |                       |   | f Service,   |                | v (max) consti                                  | iaineu operati    | IUII         |  |
| Weaving se   | g Segiller<br>nment sneed                           | s (mi/h)                 | Density,              | 42.27   | i Service,   | anu Cap        | Jacity  |                   |              |  |
| Weaving segment speed, S (mi/h) Weaving segment density, D (pc/mi/ln)          |   |                          | 29.80                 |   |  |                |   |                   |              |  |
| Level of service, LOS  |   |                          | D D                   |   |  |                |   |                   |              |  |
|  | base condition                                      | ı, c <sub>h</sub> (pc/h) |                       | 6565  |  |                |   |                   |              |  |
|  | a 15-minute fl                                      | <u> </u>                 | n/h)                  | 6500  |  |                |   |                   |              |  |
|  | a full-hour vol                                     |                          |                       | 5980  |  |                |   |                   |              |  |
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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  | BASIC F                  | REEWAY SE        | GMENTS W                    | ORKSHEET   |  |  |
|--|--------------------------|------------------|-----------------------------|--|--|--|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 65 mith 55 mith 55 mith 55 mith 60 mith 60 mith 65 mith 60 mi | B C C                    | 1500 2000        | 0 2400                      | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS | , v <sub>p</sub> N, S, D<br>, N v <sub>p</sub> , S, D<br>, ADT LOS, S, D<br>, AADT N, S, D |
| General Information  | Flow Rate (pc/h/lin      | )                | Site Inforn                 | nation   |  |  |
| Analyst  | SEB                      |                  |                             | ction of Travel  | Northbou   | nd I-87  |
| Agency or Company  | CHA                      |                  | From/To                     | onon or mavor  | Exit 2 to E  | -  |
| Date Performed   | 02/15/12                 |                  | Jurisdiction                |  | NYSDOT   |  |
| Analysis Time Period   | AM                       |                  | Analysis Year               | •  | 2026 Diai  | mond   |
| Project Description Exit 4   |                          |                  |                             |  |  |  |
| ✓ Oper.(LOS)   |                          |                  | Des.(N)                     |  | ☐ Plan   | ning Data  |
| <b>Flow Inputs</b><br>Volume, V  | 3500                     | veh/h            | Peak-Hour Fa                | otor DUE   | 0.00   |  |
| AADT   | 3500                     | ven/n<br>veh/day | %Trucks and                 | •  | 0.92<br>2  |  |
| Peak-Hr Prop. of AADT, K   |                          | veri/day         | %RVs, P <sub>R</sub>        | Du303, 1 T   | 0  |  |
| Peak-Hr Direction Prop, D  |                          |                  | General Terra               | ain:   | Level  |  |
| DDHV = AADT x K x D  |                          | veh/h            | Grade %                     | Length   | mi   |  |
| Driver type adjustment   | 1.00                     |                  |                             | Up/Down %  |  |  |
| Calculate Flow Adjustr   | nents                    |                  |                             |  |  |  |
| $f_p$  | 1.00                     |                  | E <sub>R</sub>              |  | 1.2  |  |
| E <sub>T</sub>   | 1.5                      |                  | $f_{HV} = 1/[1 + P_T(E_T)]$ | r - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |  |
| Speed Inputs   |                          |                  |                             | d Adj and FFS  | <u> </u>   |  |
| Lane Width   | 12.0                     | ft               |                             | •  |  | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0                      | ft               | f <sub>LW</sub>             |  |  |  |
| Interchange Density  | 0.50                     | l/mi             | $f_{LC}$                    |  |  | mi/h   |
| Number of Lanes, N   | 3                        |                  | $f_ID$                      |  |  | mi/h   |
| FFS (measured)   | 56.0                     | mi/h             | $f_N$                       |  |  | mi/h   |
| Base free-flow Speed, BFFS   | 30.0                     | mi/h             | FFS                         |  | 56.0   | mi/h   |
| LOS and Performance  | Moscuros                 | 1111/11          | Docian (N)                  |  |  |  |
| LOS and Performance  | Weasures                 |                  | Design (N)  Design (N)      | 1  |  |  |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N   | x f <sub>HV</sub> x 1281 | pc/h/ln          | Design LOS                  | HV) / (PHF x N x   | f <sub>⊢∨</sub> x  |  |
| t <sub>p</sub> )   | _                        | •                | f <sub>p</sub> )            |  |  | pc/h   |
| S  | 56.0                     | mi/h             | S S                         |  |  | mi/h   |
| $D = v_p / S$  | 22.9                     | pc/mi/ln         | $D = v_p / S$               |  |  | pc/mi/ln   |
| LOS  | С                        |                  | F                           | mber of Lanes, N   |  | L  |
| Glossary   |                          |                  | Factor Loc                  |  |  |  |
| N - Number of lanes  | S - Speed                |                  |                             |  |  |  |
| V - Hourly volume  | D - Density              |                  | E <sub>R</sub> - Exhibits2  |  |  | f <sub>LW</sub> - Exhibit 23-4   |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow          | / speed          | I .                         | 23-8, 23-10, 23-1  |  | f <sub>LC</sub> - Exhibit 23-5   |
| LOS - Level of service   | BFFS - Base fr           |                  | f <sub>p</sub> - Page 23-1  |  |  | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho   |                          | oo now speed     | LOS, S, FFS,                | v <sub>p</sub> - Exhibits 23-2   | 2, 23-3  | f <sub>ID</sub> - Exhibit 23-7   |
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|  | BASIC F                     | REEWAY SE                            | EGMENTS W   | ORKSHEET   |   |  |
|--|-----------------------------|--------------------------------------|---|--|---|--|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 65 mith 60 mith 65 mith 60 mith 65 mith 60 mith 65 mith 60 mith 65 mith 60 mith 65 mith 60 mi | B C C                       | 150 (600)<br>1750 (1750)<br>1600 200 | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v <sub>p</sub><br>FFS, LOS,<br>FFS, LOS,<br>FFS, LOS,<br>FFS, LOS, | v <sub>p</sub> N, S, D<br>N v <sub>p</sub> , S, D<br>ADT LOS, S, D<br>AADT N, S, D |
| General Information  | Flow Rate (pc/h/lin         | )                                    | Site Inform                                       | nation   |   |  |
| Analyst  | SEB                         |                                      |   | ction of Travel  | Southbour   | nd I-87  |
| Agency or Company  | CHA                         |                                      | From/To   | olion of mavor   | Exit 4 to E   | -  |
| Date Performed   | 02/15/12                    |                                      | Jurisdiction                                      |  | NYSDOT  | =  |
| Analysis Time Period   | AM                          |                                      | Analysis Year                                     | r  | 2026 Diam   | nond   |
| Project Description Exit 4   |                             |                                      |   |  |   |  |
| Oper.(LOS)   |                             |                                      | Des.(N)   |  | ☐ Planr   | ing Data   |
| Flow Inputs  |                             |                                      |   |  |   |  |
| Volume, V  | 5250                        | veh/h                                | Peak-Hour Fa                                      | •  | 0.92  |  |
| AADT   |                             | veh/day                              | %Trucks and                                       | buses, P <sub>T</sub>  | 2   |  |
| Peak-Hr Prop. of AADT, K   |                             |                                      | %RVs, P <sub>R</sub><br>General Terra             | -i   | 0   |  |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D   |                             | veh/h                                | Grade %   | Length   | Level<br>mi   |  |
| Driver type adjustment   | 1.00                        | VOI WIT                              |   | Up/Down %  | ****  |  |
| Calculate Flow Adjustr   | ments                       |                                      |   | •  |   |  |
| $f_p$  | 1.00                        |                                      | E <sub>R</sub>                                    |  | 1.2   |  |
| E <sub>T</sub>   | 1.5                         |                                      | • •   | <sub>r</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990   |  |
| Speed Inputs   |                             |                                      |   | d Adj and FFS  | }   |  |
| Lane Width   | 12.0                        | ft                                   |   |  |   | ://-   |
| Rt-Shoulder Lat. Clearance   | 6.0                         | ft                                   | f <sub>LW</sub>                                   |  |   | mi/h   |
| Interchange Density  | 0.50                        | I/mi                                 | $f_{LC}$  |  |   | mi/h   |
| Number of Lanes, N   | 3                           | ,,,,,                                | $f_ID$  |  |   | mi/h   |
| FFS (measured)   | <i>56.0</i>                 | mi/h                                 | $f_N$   |  |   | mi/h   |
| ·  | 30.0                        |                                      | FFS   |  | 56.0  | mi/h   |
| Base free-flow Speed, BFFS   | Manageman                   | mi/h                                 |   |  |   |  |
| LOS and Performance  | weasures                    |                                      | Design (N)  |  |   |  |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N   | x f <sub>HV</sub> x<br>1921 | pc/h/ln                              | Design (N) Design LOS  v <sub>p</sub> = (V or DD) | HV) / (PHF x N x   | f <sub>HV</sub> x   |  |
| t <sub>p</sub> )   | <i>55.</i> 0                |                                      | f <sub>p</sub> )                                  |  |   | pc/h   |
| S<br>D   | 55.6                        | mi/h                                 | S   |  |   | mi/h   |
| $D = v_p / S$  | 34.6                        | pc/mi/ln                             | $D = v_p / S$                                     |  |   | pc/mi/ln   |
| LOS  | D                           |                                      | · ·   | mber of Lanes, N   |   | •  |
| Glossary   |                             |                                      | Factor Loc  |  |   |  |
| N - Number of lanes  | S - Speed                   |                                      |   |  |   |  |
| V - Hourly volume  | D - Density                 |                                      | E <sub>R</sub> - Exhibits2                        |  |   | LW - Exhibit 23-4  |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow             | / speed                              | I '   | 23-8, 23-10, 23-1  |   | LC - Exhibit 23-5  |
| LOS - Level of service   | BFFS - Base from            |                                      | f <sub>p</sub> - Page 23-1                        |  |   | <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho   |                             | opood                                | LOS, S, FFS,                                      | v <sub>p</sub> - Exhibits 23-2   | 2, 23-3   | <sub>ID</sub> - Exhibit 23-7   |
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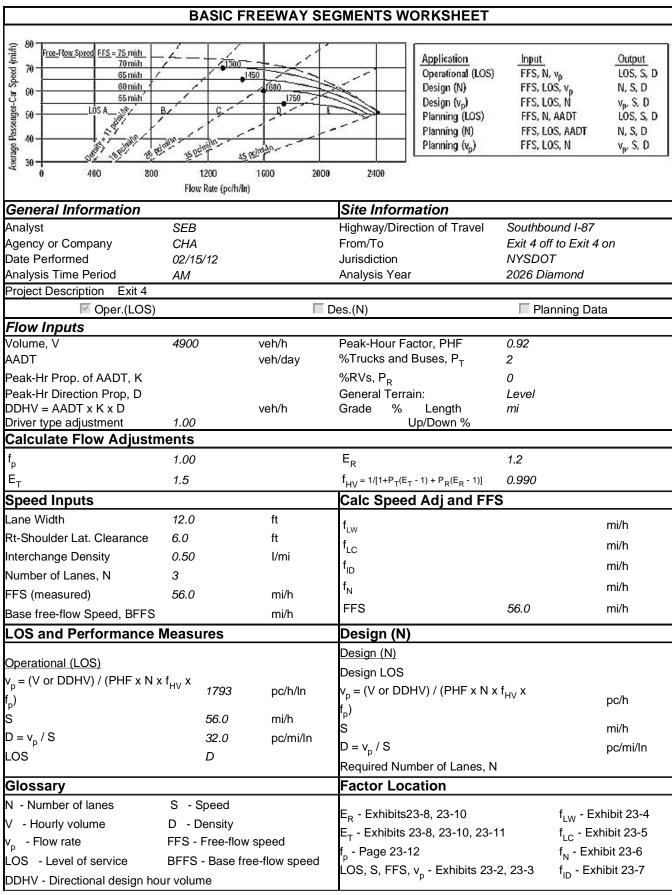
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|  | BASIC F  | REEWAY SE           | GMENTS W                   | ORKSHEET   |                                   |   |
|--|--|---------------------|----------------------------|--|-----------------------------------|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith   | -/   | /                   |                            | Application  | <u> Input</u>                     | Output  |
| S 60 60 min 55 min 65 m | B, C.  | 450<br>(600<br>(750 |                            | Operational (LOS) Design (N) Design (v <sub>p</sub> )  | FFS, N, v<br>FFS, LOS<br>FFS, LOS | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D |
| Los A  | And the Section of th | Kingle              |                            | Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | FFS, N, A<br>FFS, LOS<br>FFS, LOS | S, AADT N, S, D   |
| 30 400 800   |  | 1600 2000           | 2400                       |  |                                   |   |
| General Information  |  |                     | Site Inform                | nation   |                                   |   |
| Analyst  | SEB  |                     | Highway/Dire               | ection of Travel                                       | Northbou                          | nd I-87   |
| Agency or Company  | CHA  |                     | From/To                    |  |                                   | to Exit 4 on  |
| Date Performed   | 02/15/12   |                     | Jurisdiction               |  | NYSDOT                            |   |
| Analysis Time Period Project Description Exit 4  | AM   |                     | Analysis Yea               | r  | 2026 Diar                         | mona  |
| Oper.(LOS)   |  | П                   | Des.(N)                    |  | ☐ Plan                            | ning Data   |
| Flow Inputs  |  |                     | 200.(. 1)                  |  |                                   | g 2 a.u.  |
| Volume, V  | 2550   | veh/h               | Peak-Hour Fa               | actor, PHF   | 0.92                              |   |
| AADT   |  | veh/day             | %Trucks and                | Buses, P <sub>T</sub>                                  | 2                                 |   |
| Peak-Hr Prop. of AADT, K   |  |                     | %RVs, P <sub>R</sub>       |  | 0                                 |   |
| Peak-Hr Direction Prop, D  |  |                     | General Terra              |  | Level                             |   |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00   | veh/h               | Grade %                    | Length<br>Up/Down %                                    | mi                                |   |
| Calculate Flow Adjustr   |  |                     |                            | Op/Down /6   |                                   |   |
| f <sub>p</sub>   | 1.00   |                     | E <sub>R</sub>             |  | 1.2                               |   |
| E <sub>T</sub>   | 1.5  |                     |                            | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]          | 0.990                             |   |
| Speed Inputs   |  |                     |                            | d Adj and FFS  |                                   |   |
| Lane Width   | 12.0   | ft                  |                            |  |                                   | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft                  | f <sub>LW</sub>            |  |                                   | mi/h  |
| Interchange Density  | 0.50   | I/mi                | f <sub>LC</sub>            |  |                                   | mi/h  |
| Number of Lanes, N   | 3  |                     | $f_ID$                     |  |                                   | mi/h  |
| FFS (measured)   | <i>56.0</i>  | mi/h                | $f_N$                      |  |                                   | mi/h  |
| Base free-flow Speed, BFFS   | 30.0   | mi/h                | FFS                        |  | 56.0                              | mi/h  |
| LOS and Performance  | Measures   | 1111/11             | Design (N                  | 1  |                                   |   |
| Loo and i criormance   | Measures   |                     | Design (N)                 | <i>)</i>   |                                   |   |
| Operational (LOS)  |  |                     | Design LOS                 |  |                                   |   |
| v <sub>p</sub> = (V or DDHV) / (PHF x N :<br>f <sub>p</sub> )  | x f <sub>HV</sub> x<br>933   | pc/h/ln             | $v_p = (V \text{ or } DD)$ | PHV) / (PHF x N x 1                                    | f <sub>HV</sub> x                 | pc/h  |
| S  | 56.0   | mi/h                | f <sub>p</sub> )           |  |                                   | mi/h  |
| $D = v_p / S$  | 16.7   | pc/mi/ln            | $D = v_p / S$              |  |                                   | pc/mi/ln  |
| LOS  | В  |                     | · ·                        | mber of Lanes, N                                       |                                   | po/m/m  |
| Glossary   |  |                     | Factor Loc                 |  |                                   |   |
| N - Number of lanes  | S - Speed  |                     | 1                          |  |                                   |   |
| V - Hourly volume  | D - Density  |                     | E <sub>R</sub> - Exhibits: |  |                                   | f <sub>LW</sub> - Exhibit 23-4                          |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow  | / speed             |                            | 23-8, 23-10, 23-11                                     |                                   | f <sub>LC</sub> - Exhibit 23-5                          |
| LOS - Level of service   | BFFS - Base from   |                     | f <sub>p</sub> - Page 23-  | 12   |                                   | f <sub>N</sub> - Exhibit 23-6                           |
| DDHV - Directional design ho   |  | ee-now speed        | LOS, S, FFS                | , v <sub>p</sub> - Exhibits 23-2                       | , 23-3                            | f <sub>ID</sub> - Exhibit 23-7                          |
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|  | BASIC F                 | REEWAY SE                                | EGMENTS W                             | ORKSHEET   |  |  |
|--|-------------------------|--|---------------------------------------|--|--|--|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 65 mith 55 mith 55 mith 50 LOS A 70 | B C C S                 | 1450<br>(600<br>1750<br>1750<br>1600 200 | 0 2400                                | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS | , v <sub>p</sub> N, S, D<br>, N v <sub>p</sub> , S, D<br>, ADT LOS, S, D<br>, AADT N, S, D |
| General Information  | Flow Rate (pc/h/lir     | 1)                                       | Site Inform                           | nation   |  |  |
| Analyst  | SEB                     |  |                                       | ction of Travel  | Northbou   | nd I-87  |
| Agency or Company  | CHA                     |  | From/To                               | otion of mavor   | Exit 4 to E  |  |
| Date Performed   | 02/15/12                |  | Jurisdiction                          |  | NYSDOT   |  |
| Analysis Time Period   | AM                      |  | Analysis Year                         |  | 2026 Diar  | nond   |
| Project Description Exit 4   |                         |  |                                       |  |  |  |
| Oper.(LOS)   |                         |  | Des.(N)                               |  | ☐ Plan   | ning Data  |
| Flow Inputs  |                         |  |                                       |  |  |  |
| Volume, V  | 2600                    | veh/h                                    | Peak-Hour Fa<br>%Trucks and           | •  | 0.92   |  |
| AADT   |                         | veh/day                                  |                                       | buses, r <sub>T</sub>  | 2  |  |
| Peak-Hr Prop. of AADT, K<br>Peak-Hr Direction Prop, D  |                         |  | %RVs, P <sub>R</sub><br>General Terra | in.  | 0<br>Level   |  |
| DDHV = AADT x K x D  |                         | veh/h                                    | Grade %                               | Length   | mi   |  |
| Driver type adjustment   | 1.00                    |  |                                       | Jp/Down %  |  |  |
| Calculate Flow Adjustr   | nents                   |  |                                       |  |  |  |
| $f_p$  | 1.00                    |  | E <sub>R</sub>                        |  | 1.2  |  |
| E <sub>T</sub>   | 1.5                     |  | $f_{HV} = 1/[1 + P_{T}(E_{T})]$       | 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |  |
| Speed Inputs   |                         |  |                                       | d Adj and FFS  | 3  |  |
| Lane Width   | 12.0                    | ft                                       |                                       | •  |  | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0                     | ft                                       | f <sub>LW</sub>                       |  |  |  |
| Interchange Density  | 0.50                    | I/mi                                     | f <sub>LC</sub>                       |  |  | mi/h   |
| Number of Lanes, N   | 3                       |  | $f_ID$                                |  |  | mi/h   |
| FFS (measured)   | 56.0                    | mi/h                                     | $f_N$                                 |  |  | mi/h   |
| Base free-flow Speed, BFFS   | 00.0                    | mi/h                                     | FFS                                   |  | 56.0   | mi/h   |
| LOS and Performance  | Measures                | 1111/11                                  | Design (N)                            |  |  |  |
| LOS and renormance   | Wicasures               |  | Design (N)  Design (N)                |  |  |  |
| Operational (LOS)  |                         |  |                                       |  |  |  |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$  | x f <sub>HV</sub> x 951 | n a /h /l n                              | Design LOS                            | U\/\   | f v  |  |
| f <sub>p</sub> )   | 951                     | pc/h/ln                                  | . 5                                   | HV) / (PHF x N x   | I <sub>HV</sub> X  | pc/h   |
| S  | 56.0                    | mi/h                                     | f <sub>p</sub> )                      |  |  | 1 B  |
| $D = v_p / S$  | 17.0                    | pc/mi/ln                                 | S<br>D :: / C                         |  |  | mi/h   |
| LOS  | В                       |  | $D = v_p / S$                         |  |  | pc/mi/ln   |
| 01   |                         |  |                                       | nber of Lanes, N   |  |  |
| Glossary   | 0 0 1                   |  | Factor Loc                            | ation  |  |  |
| N - Number of lanes  | S - Speed               |  | E <sub>R</sub> - Exhibits2            | 23-8, 23-10  |  | f <sub>LW</sub> - Exhibit 23-4   |
| V - Hourly volume  | D - Density             |  | 1 * *                                 | 23-8, 23-10, 23-1 <sup>-</sup>   |  | f <sub>LC</sub> - Exhibit 23-5   |
| v <sub>p</sub> - Flow rate   | FFS - Free-flov         |  | f <sub>p</sub> - Page 23-1            |  |  | f <sub>N</sub> - Exhibit 23-6  |
| LOS - Level of service   | BFFS - Base fr          | ee-flow speed                            |                                       | v <sub>p</sub> - Exhibits 23-2   |  | f <sub>ID</sub> - Exhibit 23-7   |
| DDHV - Directional design ho   | our volume              |  |                                       | р 3 2 2 3 2  |  | עו   |
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|  | BASIC F  | REEWAY SE                                | EGMENTS W   | ORKSHEET   |   |   |
|--|--|--|---|--|---|---|
| Wassender Car Speed FFS = 75 mith 70 mith 70 mith 70 mith 60 mith 60 mith 55 mith 60 mith 65 m | B C C  | 1450<br>(600<br>1750<br>0<br>1600<br>200 | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v <sub>p</sub><br>FFS, LOS, v<br>FFS, LOS, N<br>FFS, LOS, A<br>FFS, LOS, A | v <sub>p</sub> , S, D<br>ot los, S, D<br>adt N, S, D              |
| General Information  | Tion rue (periin                                     | 74.                                      | Site Infori   | mation   |   |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>AM                         |  | -   | ection of Travel   | Southbound<br>Exit 5 to Exi<br>NYSDOT<br>2026 Diamo   | t 4   |
| ✓ Oper.(LOS)   |  |  | Des.(N)   |  | ☐ Plannir   | ng Data   |
| Flow Inputs  Volume, V  AADT  Peak-Hr Prop. of AADT, K  Peak-Hr Direction Prop, D  DDHV = AADT x K x D   | 5600   | veh/h<br>veh/day<br>veh/h                | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terr<br>Grade % | I Buses, P <sub>T</sub> ain: Length  | 0.92<br>2<br>0<br>Level<br>mi   |   |
| Driver type adjustment  Calculate Flow Adjustr   | 1.00<br>nonts  |  |   | Up/Down %  |   |   |
|  |  |  |   |  | 1.2   |   |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.00<br>1.5  |  | E <sub>R</sub>  |  | 0.990   |   |
| Speed Inputs   | 1.5  |  |   | ed Adj and FFS   |   |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>3<br>56.0                     | ft<br>ft<br>I/mi<br>mi/h                 | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS            | a Adjana i i o   | 56.0  | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h                              |
| Base free-flow Speed, BFFS   |  | mi/h                                     |   |  |   | ,   |
| LOS and Performance  Operational (LOS)  v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>p</sub> )  S  D = v <sub>p</sub> / S  LOS   |  | pc/h/ln<br>mi/h<br>pc/mi/ln              | $f_p$ )<br>S<br>D = $v_p$ / S   | )<br>DHV) / (PHF x N x t<br>mber of Lanes, N   | f <sub>HV</sub> <b>x</b>  | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |  |  | Factor Lo   |  |   |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flov BFFS - Base fr |  | $E_R$ - Exhibits<br>$E_T$ - Exhibits<br>$f_p$ - Page 23-                      | 23-8, 23-10<br>23-8, 23-10, 23-11  | I f <sub>L</sub>  | N - Exhibit 23-4 C - Exhibit 23-5 - Exhibit 23-6 C - Exhibit 23-7 |
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|  | BASIC FI  | REEWAY SE   | GMENTS W   | ORKSHEET   |   |  |
|--|---|---|--|--|---|--|
| Free-Flow Speed FFS = 75 mith   70 | B C   | 150 1750 1750 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, vp FFS, LOS, vp FFS, LOS, N FFS, N, AADT FFS, LOS, AADT FFS, LOS, N | Output LOS, S, D N, S, D v <sub>p</sub> , S, D LOS, S, D N, S, D v <sub>p</sub> , S, D |
| General Information  | Flow Rate (pc/h/ln)   | į.  | Site Inform  | mation   |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | CLD<br>CHA<br>7/30/13<br>AM                                       |   |  | ection of Travel   | Northbound I-8<br>Exit 5 to Exit 6<br>NYSDOT<br>2026 Diamond                      | 7  |
| Oper.(LOS)   |   |   | Des.(N)  |  | Planning [  | Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 2550  | veh/h<br>veh/day                                    | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra                 | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level   |  |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00  | veh/h   | Grade %  | Length<br>Up/Down %  | mi  |  |
| Calculate Flow Adjustr   |   |   |  |  |   |  |
| f <sub>p</sub>   | 1.00  |   | E <sub>R</sub>   |  | 1.2   |  |
| E <sub>T</sub>   | 1.5   |   |  | $T - 1 + P_R(E_R - 1)$   | 0.990   |  |
| Speed Inputs Lane Width  | 12.0  | ft  |  | d Adj and FFS  | )   | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0   | ft  | f <sub>LW</sub>  |  |   | mi/h   |
| Interchange Density  | 0.50  | I/mi  | f <sub>LC</sub>  |  |   | mi/h   |
| Number of Lanes, N   | 4   |   | f <sub>ID</sub>  |  |   | mi/h   |
| FFS (measured)   | 56.0  | mi/h  | f <sub>N</sub>   |  |   | mi/h   |
| Base free-flow Speed, BFFS   |   | mi/h  | FFS  |  | 56.0  | mi/h   |
| LOS and Performance  | Measures  |   | Design (N  |  |   |  |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N :<br>f <sub>p</sub> )   | x f <sub>HV</sub> x 700   | pc/h/ln   | L.S.   | 9HV) / (PHF x N x t  | f <sub>HV</sub> x   | pc/h   |
| S<br>D = v <sub>p</sub> / S<br>LOS   | 56.0<br>12.5<br>B   | mi/h<br>pc/mi/ln                                    | r <sub>p</sub> ) S D = v <sub>p</sub> / S Required Nu                                | mber of Lanes, N   |   | mi/h<br>pc/mi/ln   |
| Glossary   |   |   | Factor Loc   | · · · · · · · · · · · · · · · · · · ·  |   |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base freedour volume | •   | E <sub>R</sub> - Exhibits:<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1 f <sub>LC</sub> - f <sub>N</sub> - E  | Exhibit 23-4<br>Exhibit 23-5<br>xhibit 23-6<br>Exhibit 23-7                            |
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|  | BASIC F                      | REEWAY SE        | GMENTS W  | ORKSHEET   |   |  |
|--|------------------------------|------------------|---|--|---|--|
| So   | B C                          | 1600 2000        | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input  FFS, N, Vp  FFS, LOS, Vp  FFS, LOS, N  FFS, N, AADT  FFS, LOS, AADT  FFS, LOS, N | Output LOS, S, D N, S, D v <sub>p</sub> , S, D LOS, S, D N, S, D v <sub>p</sub> , S, D |
| General Information  |                              | ¢3               | Site Inform   | nation   |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4 | CLD<br>CHA<br>07/30/13<br>AM |                  |   | ection of Travel   | Southbound I-87<br>Exit 6 to Exit 5<br>NYSDOT<br>2026 Diamond                           | ,  |
| ✓ Oper.(LOS)   |                              |                  | Des.(N)   |  | ☐ Planning Da   | ata  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D            | 6200                         | veh/h<br>veh/day | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra    | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level   |  |
| DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjustn                        | 1.00                         | veh/h            | Grade %   | Length<br>Up/Down %  | mi  |  |
| f <sub>p</sub>   | 1.00                         |                  | E <sub>R</sub>  |  | 1.2   |  |
| E <sub>T</sub>   | 1.5                          |                  |   |  | 0.990   |  |
| Speed Inputs   |                              |                  | 10.00   | d Adj and FFS  |   |  |
| Lane Width   | 12.0                         | ft               |   | <u> </u>   |   | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0                          | ft               | f <sub>LW</sub>   |  |   |  |
| Interchange Density  | 0.50                         | I/mi             | f <sub>LC</sub>   |  |   | mi/h   |
| Number of Lanes, N   | 4                            |                  | f <sub>ID</sub>   |  |   | mi/h   |
| FFS (measured)   | 56.0                         | mi/h             | $f_N$   |  |   | mi/h   |
| Base free-flow Speed, BFFS   |                              | mi/h             | FFS   |  | 56.0  | mi/h   |
| LOS and Performance  | Measures                     |                  | Design (N   | )  |   |  |
| Operational (LOS)<br>V <sub>p</sub> = (V or DDHV) / (PHF x N x<br>f <sub>p</sub> )       | x f <sub>HV</sub> x 1702     | pc/h/ln          | $\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DD})$ | 0HV) / (PHF x N x f <sub>I</sub>   | <sub>HV</sub> X   | pc/h   |
| S<br>D = v <sub>p</sub> / S<br>LOS   | 56.0<br>30.4<br>D            | mi/h<br>pc/mi/ln | $f_p$ ) $S$ $D = v_p / S$ Required Nu                                   | mber of Lanes, N   |   | mi/h<br>pc/mi/ln   |
| Glossary   |                              |                  | Factor Loc  | <u> </u>   |   |  |
| N - Number of lanes  | S - Speed                    |                  |   |  |   |  |
| V - Hourly volume  | D - Density                  |                  | E <sub>R</sub> - Exhibits:  |  | =   | xhibit 23-4  |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow              | speed            |   | 23-8, 23-10, 23-11   |   | xhibit 23-5  |
| LOS - Level of service   | BFFS - Base fre              | •                | f <sub>p</sub> - Page 23-   |  |   | hibit 23-6   |
| DDHV - Directional design ho   |                              | •                | LOS, S, FFS   | , v <sub>p</sub> - Exhibits 23-2,  | , 23-3 f <sub>ID</sub> - Ex   | chibit 23-7  |
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|  |   | MPS AND                                      |  |   |                                     | <u></u>               |                   |                          |                                 |                                    |
|--|---|--|--|---|-------------------------------------|-----------------------|-------------------|--------------------------|---------------------------------|------------------------------------|
| General Infor  | mation  |  |  | Site Infor  | mation                              |                       |                   |                          |                                 |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | 02/15   |  | Jui<br>Jui                               | eeway/Dir of Tr<br>nction<br>isdiction<br>alysis Year | Exit 2W On-Ramp<br>NYSDOT           |                       |                   |                          |                                 |                                    |
| Project Description  |   |  | All                                      | aiysis i cai  |                                     | 2020 Dia              | IIIUIIU           |                          |                                 |                                    |
| nputs  | LAIC I  |  |  |   |                                     |                       |                   |                          |                                 |                                    |
| Jpstream Adj Ramp  |   | Terrain: Level                               |  |   |                                     |                       |                   |                          | Downstre                        | am Adj                             |
| Yes Or   | 1   |  |  |   |                                     |                       |                   |                          | Ramp<br>☐ Yes                   | □ On                               |
| □ No     Of  | f   |  |  |   |                                     |                       |                   |                          | ☑ No                            | ☐ Off                              |
| <sub>up</sub> = 1100   | ft  |  |  |   |                                     |                       |                   |                          | L <sub>down</sub> =             | ft                                 |
| $v_{u} = 670 \text{ v}$  | eh/h  | S  | $_{FF} = 56.0 \text{ mph}$<br>Sketch ( s | show lanes, L <sub>a</sub> ,                          | $S_{FR} = 4$ $L_{D_i}V_{R_i}V_{f}$  | 0.0 mph               |                   |                          | V <sub>D</sub> =                | veh/h                              |
| Conversion t   | o pc/h Und  | der Base C                                   | Conditions                               |   |                                     |                       |                   |                          |                                 |                                    |
| (pc/h)   | V<br>(Veh/hr)   | PHF  | Terrain                                  | %Truck  | %Rv                                 | f <sub>H</sub>        | V                 | f <sub>p</sub>           | v = V/PHF                       | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 3100  | 0.92   | Level                                    | 2   | 0                                   | 0.99                  | 0                 | 1.00                     | 3                               | 3403                               |
| Ramp   | 390   | 0.92   | Level                                    | 2   | 0                                   | 0.99                  | 0                 | 1.00                     |                                 | 428                                |
| UpStream   | 670   | 0.92   | Level                                    | 2   | 0                                   | 0.99                  | 0                 | 1.00                     |                                 | 736                                |
| DownStream   |   | M A  |  |   | <u> </u>                            |                       |                   | D: A                     |                                 |                                    |
| Estimation o   |   | Merge Areas                                  |  |   | Estimati                            | ion of                |                   | Diverge Areas            |                                 |                                    |
| _Stimation of  |   |  |  |   | LStillati                           | 011 01                | 12                |                          |                                 |                                    |
|  | $V_{12} = V_F$  |  |  |   |                                     |                       | V <sub>12</sub> = | $V_R + (V_F - V_F)$      | ′ <sub>R</sub> )P <sub>FD</sub> |                                    |
| -EQ =  |   | (Equation 2                                  |  |   | L <sub>EQ</sub> =                   |                       |                   | (Equation 2              | 5-8 or 25-9                     | ))                                 |
| P <sub>FM</sub> =  | 0.601   | using Equation                               | on (Exhibit 25-5)                        |   | P <sub>FD</sub> =                   |                       |                   | using Equat              | ion (Exhibit                    | 25-12)                             |
| / <sub>12</sub> =  | 2046  |  |  |   | V <sub>12</sub> =                   |                       |                   | pc/h                     |                                 |                                    |
| 7 <sub>3</sub> or V <sub>av34</sub>                                    |   | oc/h (Equatio                                | n 25-4 or 25-                            |   | V <sub>3</sub> or V <sub>av34</sub> |                       |                   | pc/h (Equation           | 25-15 or 25                     | -16)                               |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,70                           | 5)<br>00 nc/h? □ ∨o.                                  | e 🔽 No                                       |  |   |                                     | <sub>84</sub> > 2,700 |                   | □ Yes □ N                |                                 |                                    |
| s $V_3$ or $V_{av34} > 2,76$   |   |  |  |   |                                     |                       |                   | □ Yes □ N                |                                 |                                    |
| f Yes,V <sub>12a</sub> =   | ·=  | Equation 25                                  | -8)                                      |   | If Yes,V <sub>12a</sub> =           |                       |                   | pc/h (Equati             |                                 |                                    |
| Capacity Che   |   | (Lqualion 25                                 | -0)                                      |   | Capacit                             |                       |                   |                          |                                 |                                    |
| Sapacity Cite  | Actual  | I Ca   | pacity                                   | LOS F?  | Capacit                             | y Crie                | Actual            | 1 c                      | apacity                         | LOS F                              |
|  | Actual  |  | ipacity                                  | L031;   | V <sub>F</sub>                      |                       | Actual            | Exhibit 25               |                                 | 1 2031                             |
| V  | 2021  | Evhibit 2E 7                                 |  | No  | $V_{FO} = V_{F}$                    | - \/                  |                   | Exhibit 25               |                                 |                                    |
| $V_{FO}$   | 3831  | Exhibit 25-7                                 |  | No  |                                     | - VR                  |                   |                          | _                               | _                                  |
|  | <u> </u>  | <u>                                     </u> |  |   | V <sub>R</sub>                      |                       |                   | Exhibit 25               |                                 |                                    |
| low Entering   |   |  |  | \/:-I-#0  | Flow En                             |                       |                   | erge Influe              |                                 |                                    |
| V  | Actual<br>2474  | Exhibit 25-7                                 | Desirable<br>4600:All                    | Violation?  | \/                                  | Act                   | ual               | Max Des                  | ii avie                         | Violation?                         |
| V <sub>R12</sub>   |   |  |  | No  | V <sub>12</sub>                     | <br>                  |                   |                          | on (!f ==                       | <u></u>                            |
| evel of Serv   |   |  |  |   |                                     |                       |                   | eterminati               | _                               | ι <i>Γ)</i>                        |
|  |   | 0.0078 V <sub>12</sub> - 0.00                | JUZI LA                                  |   |                                     |                       |                   | 0.0086 V <sub>12</sub> - | 0.009 L <sub>D</sub>            |                                    |
| ) <sub>R</sub> = 19.2 (pc  |   |  |  |   |                                     | c/mi/ln)              |                   |                          |                                 |                                    |
| OS = B (Exhil  |   |  |  |   |                                     | xhibit 2              |                   |                          |                                 |                                    |
| Speed Deterr   | nination  |  |  |   | Speed L                             |                       |                   | on                       |                                 |                                    |
| $M_{\rm S} = 0.299  (Exi$  | bit 25-19)  |  |  |   | ,                                   | xhibit 25             | -                 |                          |                                 |                                    |
|  | (Evhibit 25 10)                                       |  |  |   | $S_R = m_I$                         | ph (Exhib             | it 25-19          | )                        |                                 |                                    |
| $S_R = 51.8 \text{ mph}$   | (LAHIDIL 25-14)                                       |  |  |   |                                     |                       |                   |                          |                                 |                                    |
| $S_0 = 52.9 \text{ mph}$   | (Exhibit 25-19)<br>(Exhibit 25-19)<br>(Exhibit 25-14) |  |  |   |                                     | ph (Exhib             | it 25-19          | )                        |                                 |                                    |

|   |                                  | IVAIMI (                            | S AND RAN                |   |  | NNO               |                 |  |                     |                                    |
|---|----------------------------------|-------------------------------------|--------------------------|---|--|-------------------|-----------------|--|---------------------|------------------------------------|
| General Info  | rmation                          |                                     |                          | Site Infor  |  |                   |                 |  |                     |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 02/15                            |                                     | J                        | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year | !<br>1   | Exit 4 N<br>NYSD( |                 |  |                     |                                    |
| Project Description   | Exit 4                           |                                     |                          |   |  |                   |                 |  |                     |                                    |
| Inputs  |                                  |                                     |                          |   |  |                   |                 |  |                     |                                    |
| Upstream Adj Ramp   |                                  | Terrain: Leve                       |                          |   |  |                   |                 |  | Downstrea<br>Ramp   | m Adj                              |
| ☐ Yes ☐ O   |                                  |                                     |                          |   |  |                   |                 |  | ✓ Yes               | ✓ On                               |
| ✓ No ☐ O  | ff                               |                                     |                          |   |  |                   |                 |  | □ No                | ☐ Off                              |
| L <sub>up</sub> = ft  |                                  | S                                   | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4                                      | 0 0 mr            | h               |  | L <sub>down</sub> = | 1850 ft                            |
| V <sub>u</sub> = veh/l  |                                  |                                     | Sketch (                 | show lanes, L <sub>A</sub>                                  |  | 0.0 mp            |                 |  | V <sub>D</sub> =    | 570 <b>veh</b> /                   |
| Conversion t  |                                  | der Base (                          | Conditions               |   | •  |                   |                 | Y                                      | T .                 |                                    |
| (pc/h)  | V<br>(Veh/hr)                    | PHF                                 | Terrain                  | %Truck  | %Rv  |                   | f <sub>HV</sub> | f <sub>p</sub>                         | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 3500                             | 0.92                                | Level                    | 2   | 0  | _                 | 990             | 1.00                                   | 384                 |                                    |
| Ramp  | 950                              | 0.82                                | Level                    | 2   | 0  | 0.                | 990             | 1.00                                   | 117                 | 70                                 |
| UpStream<br>DownStream  | 570                              | 0.92                                | Lovel                    | 2   | 0  | _                 | 990             | 1.00                                   | 62                  |                                    |
| Downstieam  |                                  | Merge Areas                         | Level                    |   | U  | 0.                |                 | Diverge Areas                          | 02                  | 0                                  |
| Estimation o  |                                  | orgo7odo                            |                          |   | Estimati   | ion c             |                 | 21101g07110u0                          |                     |                                    |
|   | V <sub>12</sub> = V <sub>F</sub> | (D )                                |                          |   | <del> </del>   |                   |                 | = V <sub>R</sub> + (V <sub>F</sub> - V | \D                  |                                    |
| _   |                                  | (' <sub>FM</sub> )<br>ation 25-2 or | 25.2\                    |   | _  |                   |                 | Equation 25-8                          |                     |                                    |
| L <sub>EQ</sub> =<br>D _  |                                  | Equation (E                         |                          |   | L <sub>EQ</sub> =  |                   |                 | -                                      |                     | <b>Ь∷ ЭГ 1</b> Э\                  |
| P <sub>FM</sub> =   | pc/h                             | Lquation (L                         | .XIIIDIL 25-5)           |   | P <sub>FD</sub> =<br>V <sub>12</sub> =                   |                   |                 | .610 using Ed<br>800 pc/h              | quation (EXIII      | DIL 25-12)                         |
| V <sub>12</sub> =<br>V <sub>3</sub> or V <sub>av34</sub>              | •                                | (Equation 25                        | 4 or 25 5)               |   | V <sub>12</sub> –<br>V <sub>3</sub> or V <sub>av34</sub> |                   |                 | •                                      | otion OF 15         | o= 0E 40                           |
| Is $V_3$ or $V_{av34} > 2.79$   |                                  |                                     | -4 01 25-5)              |   |  | < 2.7             |                 | 042 pc/h (Equ                          | ialion 25-15        | 01 25-16                           |
| Is $V_3$ or $V_{av34} > 2,75$<br>Is $V_3$ or $V_{av34} > 1.5$         |                                  |                                     |                          |   |  |                   |                 | Yes Mo                                 |                     |                                    |
| If Yes,V <sub>12a</sub> =   | ·=                               | S I NO<br>(Equation 25              | -8)                      |   | If Yes, $V_{12a} =$                                      |                   |                 | oc/h (Equation                         | 25-18)              |                                    |
| Capacity Che  |                                  | (Equation 23                        | -0)                      |   | Capacity   |                   |                 | on (Equation                           | 123-10)             |                                    |
| Сараспу Спе   | Actual                           |                                     | apacity                  | LOS F?  | Capacity   | y CII             | Actual          | Ca                                     | pacity              | LOS F                              |
|   | Actual                           |                                     | арасну                   | LUST:   | V <sub>F</sub>   | $\neg$            | 3842            | Exhibit 25-1                           | 1                   | No                                 |
| V   |                                  | Exhibit 25-7                        |                          |   | -  | \/                |                 |  | _                   | +                                  |
| V <sub>FO</sub>   |                                  | EXHIBIT 23-7                        |                          |   | $V_{FO} = V_{F}$   | - v <sub>R</sub>  | 2672            | Exhibit 25-1                           |                     | No                                 |
|   |                                  |                                     |                          |   | V <sub>R</sub>   |                   | 1170            | Exhibit 25-3                           |                     | No                                 |
| Flow Enterin  | 1                                | 1                                   |                          | \/!:=!=±!   | Flow En  | 1                 |                 | rge Influen                            |                     | \B-1-1'                            |
| V   | Actual                           | Exhibit 25-7                        | Desirable                | Violation?  | \/   | _                 | Actual          | Max Desiral                            |                     | Violation                          |
| V <sub>R12</sub><br>Level of Serv                                     | ioo Doto                         |                                     | if not El                |   | V <sub>12</sub>  |                   | 2800            | Exhibit 25-14                          | 4400:All            | No                                 |
|   |                                  |                                     |                          |   |  |                   |                 | terminatio                             | -                   | )                                  |
| $D_{R} = 5.475 + 0$   |                                  | 0.0076 V <sub>12</sub> -            | 0.00021 L <sub>A</sub>   |   |  | •••               |                 | 0.0086 V <sub>12</sub> - 0.            | oos L <sub>D</sub>  |                                    |
| D <sub>R</sub> = (pc/mi   |                                  |                                     |                          |   |  |                   | /mi/ln)         |  |                     |                                    |
| •   | it 25-4)                         |                                     |                          |   |  | •                 | oit 25-4)       | <u> </u>                               |                     |                                    |
| Speed Deter   |                                  |                                     |                          |   | Speed D  |                   |                 |  |                     |                                    |
| M <sub>S</sub> = (Exibit 2  |                                  |                                     |                          |   | 1. "   | •                 | xhibit 25       | *                                      |                     |                                    |
|   | nibit 25-19)                     |                                     |                          |   |  | -                 | (Exhibit        |  |                     |                                    |
| S <sub>0</sub> = mph (ExI   | nibit 25-19)                     |                                     |                          |   | $S_0 = 61$   | .3 mph            | (Exhibit        | 25-19)                                 |                     |                                    |
|   | nibit 25-14)                     |                                     |                          |   | S = 52   |                   | (Exhibit        |  |                     |                                    |

|  |                                  | MPS AND                       | KAMP JUN                                      |   |  |  |                  |                     |                                      |
|--|----------------------------------|-------------------------------|---|---|--|--|------------------|---------------------|--------------------------------------|
| General Infor                                  | mation                           |                               |   | Site Infor                                  | mation   |  |                  |                     |                                      |
| Analyst<br>Agency or Company<br>Date Performed | SEB<br>CHA<br>02/1!              |                               | Ju  | reeway/Dir of Tra<br>unction<br>urisdiction |  | Northbound I-8<br>Exit 4 NB On-R<br>NYSDOT |                  |                     |                                      |
| nalysis Time Period                            |                                  |                               | A   | nalysis Year                                |  | 2026 Diamond                               |                  |                     |                                      |
| Project Description                            | Exit 4                           |                               |   |   |  |  |                  |                     |                                      |
| nputs  |                                  | <del></del>                   |   |   |  |  |                  | 1                   |                                      |
| Jpstream Adj Ramp<br>✓ Yes                     |                                  | Terrain: Level                |   |   |  |  |                  | Downstre<br>Ramp    | eam Adj                              |
| ▼ Yes  |                                  |                               |   |   |  |  |                  | ☐ Yes               | □ On                                 |
| INO P OI                                       | l                                |                               |   |   |  |  |                  | ✓ No                | ☐ Off                                |
| <sub>up</sub> = 1850                           | ft                               |                               |   |   | _  |  |                  | L <sub>down</sub> = | ft                                   |
| ' <sub>u</sub> = 950 v                         | eh/h                             | S                             | $_{\text{FF}} = 56.0 \text{ mph}$<br>Sketch ( | show lanes, L <sub>A'</sub>                 | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$                 | 0.0 mph                                    |                  | V <sub>D</sub> =    | veh/h                                |
| Conversion t                                   | o pc/h Un                        | der Base C                    | onditions                                     |   |  |  |                  | •                   |                                      |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                           | Terrain                                       | %Truck                                      | %Rv  | f <sub>HV</sub>                            | f <sub>p</sub>   | v = V/PH            | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 2550                             | 0.92                          | Level   | 2   | 0  | 0.990                                      | 1.00             |                     | 2799                                 |
| Ramp   | 570                              | 0.92                          | Level   | 2   | 0  | 0.990                                      | 1.00             | _                   | 626                                  |
| JpStream<br>DownStream                         | 950                              | 0.96                          | Level   | 2   | 0  | 0.990                                      | 1.00             | -                   | 999                                  |
| Jownstieam                                     |                                  | Merge Areas                   |   |   |  |  | Diverge Are      | as                  |                                      |
| stimation of                                   |                                  | werge / weds                  |   |   | Estimat  | ion of v <sub>12</sub>                     | Divergeriie      | u3                  |                                      |
|  | V <sub>12</sub> = V <sub>F</sub> | (D)                           |   |   |  |  |                  |                     |                                      |
| _  | · <del>-</del> ·                 |                               | )E 0 ~ 0E 0\                                  |   |  | V <sub>12</sub>                            | $= V_R + (V_F -$ |                     |                                      |
| EQ =   |                                  | (Equation 2                   |   |   | L <sub>EQ</sub> =                                |  |                  | 25-8 or 25-         |                                      |
| FM =   |                                  |                               | on (Exhibit 25-5)                             | )   | P <sub>FD</sub> =                                |  |                  | ation (Exhibi       | t 25-12)                             |
| 12 =   | 1719<br>1090                     | pc/n<br>pc/h (Equatio         | n 25-4 or 25-                                 |   | V <sub>12</sub> =                                |  | pc/h             |                     |                                      |
| or V <sub>av34</sub>                           | 5)                               | pc/ii (Equatio                | 11 23-4 01 23-                                |   | V <sub>3</sub> or V <sub>av34</sub>              |  |                  | on 25-15 or 2       | 5-16)                                |
| s $V_3$ or $V_{av34} > 2,70$                   | 00 pc/h?                         | s 🗹 No                        |   |   |  | <sub>34</sub> > 2,700 pc/h <sup>2</sup>    |                  |                     |                                      |
| s $V_3$ or $V_{av34} > 1.5$                    | <sup>*</sup> V <sub>12</sub> /2  | s 🗹 No                        |   |   | 0 0  | $_{34} > 1.5 * V_{12}/2$                   |                  |                     |                                      |
| Yes,V <sub>12a</sub> =                         | pc/h                             | (Equation 25-                 | 8)  |   | If Yes,V <sub>12a</sub> =                        | :  | pc/h (Equa       | ation 25-18)        |                                      |
| Capacity Che                                   | cks                              |                               |   |   | Capacit  | y Checks                                   |                  |                     |                                      |
|  | Actual                           | Ca                            | pacity  | LOS F?                                      |  | Actu                                       | al               | Capacity            | LOS F                                |
|  |                                  |                               |   |   | V <sub>F</sub>                                   |  | Exhibit :        | 25-14               |                                      |
| $V_{FO}$                                       | 3425                             | Exhibit 25-7                  |   | No  | $V_{FO} = V_{F}$                                 | - V <sub>R</sub>                           | Exhibit :        | 25-14               |                                      |
|  |                                  |                               |   |   | V <sub>R</sub>                                   |  | Exhibit          | 25-3                |                                      |
| low Entering                                   | a Merae In                       | fluence A                     | rea   |   | <del>'</del>                                     | tering Div                                 | erge Influ       | ience Are           |                                      |
|  | Actual                           |                               | esirable                                      | Violation?                                  |  | Actual                                     |                  | esirable            | Violation?                           |
| V <sub>R12</sub>                               | 2345                             | Exhibit 25-7                  | 4600:All                                      | No  | V <sub>12</sub>                                  |  | Exhibit 25-1     | i i                 |                                      |
| evel of Serv                                   | ice Deterr                       | nination (i                   | not F)  |   |  | Service L                                  |                  |                     | ot F)                                |
|  |                                  | 0.0078 V <sub>12</sub> - 0.00 |   |   | 1  | D <sub>R</sub> = 4.252 +                   |                  |                     |                                      |
| ) <sub>R</sub> = 15.3 (pc                      | .,                               | 12                            | ,,  |   |  | c/mi/ln)                                   | 12               | 5                   |                                      |
| OS = B (Exhil                                  | oit 25-4)                        |                               |   |   | LOS = (E   | xhibit 25-4)                               |                  |                     |                                      |
| Speed Deterr                                   | nination                         |                               |   |   |  | Determina                                  | tion             |                     |                                      |
| M <sub>S</sub> = 0.257 (Exi                    |                                  |                               |   |   | <del>                                     </del> | xhibit 25-19)                              |                  |                     |                                      |
| =  | (Exhibit 25-19)                  |                               |   |   |  | ph (Exhibit 25-1                           | 9)               |                     |                                      |
|  | (Exhibit 25-19)                  |                               |   |   |  | ph (Exhibit 25-1                           |                  |                     |                                      |
|  | (Exhibit 25-14)                  |                               |   |   | ľ  | ph (Exhibit 25-1                           | •                |                     |                                      |
| 5 = 52.9  mph                                  |                                  |                               |   |   |  |  |                  |                     |                                      |

|  |                                  | RAMPS                  | S AND RAI                | <b>IP JUNCTI</b>   | ONS WO                                | RKS              | HEET                     |   |                     |   |
|--|----------------------------------|------------------------|--------------------------|--|---------------------------------------|------------------|--------------------------|---|---------------------|---|
| General Infor  | mation                           |                        |                          | Site Infor   |                                       |                  |                          |   |                     |   |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | SEB<br>CHA<br>02/1!<br>I AM      |                        |                          | Freeway/Dir of Tr<br>Junction<br>Jurisdiction<br>Analysis Year | avel [                                | Exit 5 N         |                          |   |                     |   |
| Project Description  | Exit 4                           |                        |                          |  |                                       |                  |                          |   |                     |   |
| Inputs   |                                  | Terrain: Leve          | ı                        |  |                                       |                  |                          |   | _                   |   |
| Upstream Adj Ramp  |                                  | Terrain. Leve          | l                        |  |                                       |                  |                          |   | Downstrea<br>Ramp   | ım Adj  |
| ✓ Yes  ✓ Or  | 1                                |                        |                          |  |                                       |                  |                          |   | ☐ Yes               | □ On  |
| □ No □ Of  | f                                |                        |                          |  |                                       |                  |                          |   | ✓ No                | Off   |
|  |                                  |                        |                          |  |                                       |                  |                          |   |                     |   |
| L <sub>up</sub> = 7810   | ft                               | 9                      | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 3                   | E O mr           | h                        |   | L <sub>down</sub> = | ft  |
| $V_u = 570 \text{ v}$  | eh/h                             |                        | • •                      | ( show lanes, L <sub>A</sub> ,                                 |                                       | o.u iiip         | VIII                     |   | V <sub>D</sub> =    | veh/h   |
| Conversion t   |                                  | der Rase (             |                          | ( SHOW lattes, LA  | D' R' V f'                            |                  |                          |   |                     |   |
|  | <i>y</i>                         |                        |                          | 0/ Truck   | 0/ Du                                 | Т                | f                        | ,   | V - V/DUE           | v f v f                                       |
| (pc/h)   | (Veh/hr)                         | PHF                    | Terrain                  | %Truck   | %Rv                                   | +                | f <sub>HV</sub>          | -   | v = V/PHF           | *** F   |
| Freeway  | 2600                             | 0.92                   | Level                    | 2  | 0                                     | <del>-</del>     | 990                      | 1.00  | 28                  |   |
| Ramp   | 490                              | 0.96                   | Level                    | 2  | 0                                     | +                | 990                      | 1.00  | 51                  |   |
| UpStream<br>DownStream   | 570                              | 0.92                   | Level                    | 2  | 0                                     | 0.               | 990                      | 1.00  | 62                  | 26  |
|  |                                  | Merge Areas            |                          | 1  |                                       |                  |                          | Diverge Areas                                       |                     |   |
| Estimation of  | f v <sub>12</sub>                |                        |                          |  | Estimati                              | ion c            | of v <sub>12</sub>       |   |                     |   |
|  | V <sub>12</sub> = V <sub>F</sub> | (P <sub>FM</sub> )     |                          |  |                                       |                  | V <sub>12</sub> =        | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | R)P <sub>ED</sub>   |   |
| L <sub>EQ</sub> =  | (Equ                             | ation 25-2 or          | 25-3)                    |  | L <sub>FO</sub> =                     |                  | 6                        | 425.39 (Equati                                      | on 25-8 or          | 25-9)   |
| P <sub>FM</sub> =  | using                            | Equation (E            | xhibit 25-5)             |  | P <sub>FD</sub> =                     |                  |                          | .665 using Eq                                       |                     |   |
| V <sub>12</sub> =  | pc/h                             |                        |                          |  | V <sub>12</sub> =                     |                  | 2                        | 071 pc/h  |                     |   |
| V <sub>3</sub> or V <sub>av34</sub>                                    | pc/h                             | (Equation 25           | -4 or 25-5)              |  | $V_3$ or $V_{av34}$                   |                  | 7                        | 83 pc/h (Equa                                       | tion 25-15          | or 25-16)                                     |
| Is $V_3$ or $V_{av34} > 2,70$  | 00 pc/h?                         | s 🗆 No                 |                          |  | Is V <sub>3</sub> or V <sub>av3</sub> | $_{34} > 2.7$    | '00 pc/h?                | ☐ Yes 🗹 No  |                     |   |
| Is $V_3$ or $V_{av34} > 1.5$   | · <del>-</del>                   |                        |                          |  |                                       |                  |                          | ☐ Yes 🗹 No  |                     |   |
| If Yes,V <sub>12a</sub> =  |                                  | (Equation 25           | -8)                      |  | If Yes,V <sub>12a</sub> =             |                  |                          | oc/h (Equation                                      | 25-18)              |   |
| Capacity Che   | cks                              |                        |                          |  | Capacity                              | y Ch             | ecks                     |   |                     |   |
|  | Actual                           | Ci                     | apacity                  | LOS F?   | ,,                                    |                  | Actual                   | i   | pacity              | LOS F   |
| .,   |                                  |                        |                          |  | V <sub>F</sub>                        |                  | 2854                     | Exhibit 25-1  |                     | No  |
| $V_{FO}$   |                                  | Exhibit 25-7           |                          |  | $V_{FO} = V_{F}$                      | - V <sub>R</sub> | 2338                     | Exhibit 25-1  |                     | No  |
|  |                                  |                        |                          |  | V <sub>R</sub>                        |                  | 516                      | Exhibit 25-3  |                     | No  |
| Flow Entering  |                                  | 1                      |                          | \P_1=0   | Flow En                               | _                |                          | rge Influen   |                     | 1 1/2 1                                       |
| W  | Actual                           | Exhibit 25-7           | Desirable                | Violation?   | \/                                    | _                | Actual                   | Max Desirat   |                     | Violation                                     |
| V <sub>R12</sub><br>Level of Serv                                      | ica Dotorr                       |                        | f not E)                 | 1  | V <sub>12</sub>                       |                  | 2071<br>vice <b>D</b> e  | Exhibit 25-14 eterminatio                           | 4400:All            | No No   |
| $D_{R} = 5.475 + 0.00$   |                                  | •                      |                          |  |                                       |                  |                          | ).0086 V <sub>12</sub> - 0.                         | •                   | <u>r)                                    </u> |
|  | •••                              | 0.0070 v <sub>12</sub> | 0.00021 LA               |  |                                       | 1.               | /232 + C<br>/mi/ln)      | 12 - 0.   | 000 <u>-</u> D      |   |
| $D_R = (pc/mi/s)$<br>LOS = (Exhib                                      | ,                                |                        |                          |  | I ''                                  |                  | /mi/in)<br>oit 25-4)     |   |                     |   |
| Speed Deteri   |                                  |                        |                          |  | Speed D                               | `                |                          |   |                     |   |
| _  |                                  |                        |                          |  | <del> </del>                          |                  | xhibit 25                |   |                     |   |
| $M_S = (Exibit 2)$<br>$S_R = mph (Exhole)$                             |                                  |                        |                          |  | 1 ~                                   | ,                | xriibit 25<br>ı (Exhibit | ,   |                     |   |
| ເລ <sub>ກ</sub> = mnn (⊢xr   | ibit 25-19)                      |                        |                          |  |                                       | •                | •                        | : 25-19)  |                     |   |
|  | ibit 0E 40\                      |                        |                          |  |                                       |                  |                          |   |                     |   |
| S <sub>0</sub> = mph (Exh  | iibit 25-19)<br>iibit 25-14)     |                        |                          |  | 1 -                                   |                  | ı (Exhibit<br>ı (Exhibit |   |                     |   |

|  |                  | KAWIP  | S AND RAM                |  |                                     | NNO                                  | IILL I            |  |                               |                                    |
|--|------------------|--|--------------------------|--|-------------------------------------|--------------------------------------|-------------------|--|-------------------------------|------------------------------------|
| General Info   | rmation          |  |                          | Site Infor   |                                     |                                      |                   |  |                               |                                    |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric | 02/1!            |  | Ji<br>Ji                 | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | !<br>1                              | Southb<br>Exit 2V<br>NYSD(<br>2026 D | V Off             |  |                               |                                    |
| Project Description  |                  |  |                          | a.joio . oui   | •                                   | 2020 0                               | namona –          |  |                               |                                    |
| Inputs   |                  |  |                          |  |                                     |                                      |                   |  |                               |                                    |
| Upstream Adj Ramı  | )                | Terrain: Leve                                    |                          |  |                                     |                                      |                   |  | Downstrea<br>Ramp             | m Adj                              |
| ☐ Yes ☐ O  | n                |  |                          |  |                                     |                                      |                   |  | ✓ Yes                         | <b>☑</b> On                        |
| ™ No □ O   | ff               |  |                          |  |                                     |                                      |                   |  | □ No                          | ☐ Off                              |
| L <sub>up</sub> = ft   |                  | S  | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4                 | 0.0 mp                               | oh .              |  | down                          | 1300 ft                            |
| V <sub>u</sub> = veh/  |                  |  | Sketch (                 | show lanes, L <sub>A</sub>                                 |                                     |                                      |                   |  | V <sub>D</sub> =              | 340 veh/h                          |
| Conversion   | to pc/h Un       | der Base (                                       | Conditions               |  |                                     | 1                                    |                   |  |                               |                                    |
| (pc/h)   | V<br>(Veh/hr)    | PHF  | Terrain                  | %Truck   | %Rv                                 |                                      | f <sub>HV</sub>   | f <sub>p</sub>                         | v = V/PHF                     | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 5250             | 0.92   | Level                    | 2  | 0                                   | 0.                                   | .990              | 1.00                                   | 576                           | 54                                 |
| Ramp   | 940              | 0.92   | Level                    | 2  | 0                                   | 0.                                   | .990              | 1.00                                   | 103                           | 32                                 |
| UpStream   | 1                | <del>                                     </del> |                          |  |                                     | 4                                    |                   |  |                               |                                    |
| DownStream   | 340              | 0.92   | Level                    | 2  | 0                                   | 0.                                   | .990              | 1.00                                   | 37                            | 3                                  |
| Estimation o   |                  | Merge Areas                                      |                          |  | Fotimoti                            | ion                                  |                   | Diverge Areas                          |                               |                                    |
| Estimation o   |                  |  |                          |  | Estimati                            | on c                                 |                   |  |                               |                                    |
|  | $V_{12} = V_{F}$ | (P <sub>FM</sub> )                               |                          |  |                                     |                                      | V <sub>12</sub> = | = V <sub>R</sub> + (V <sub>F</sub> - V | <sub>R</sub> )P <sub>FD</sub> |                                    |
| L <sub>EQ</sub> =  | (Equ             | ation 25-2 or                                    | 25-3)                    |  | L <sub>EQ</sub> =                   |                                      | (                 | Equation 25-8                          | 3 or 25-9)                    |                                    |
| P <sub>FM</sub> =  | using            | Equation (E                                      | xhibit 25-5)             |  | P <sub>FD</sub> =                   |                                      | 0                 | .568 using Ed                          | quation (Exhi                 | bit 25-12)                         |
| V <sub>12</sub> =  | pc/h             |  |                          |  | V <sub>12</sub> =                   |                                      | 3                 | 722 pc/h                               |                               |                                    |
| V <sub>3</sub> or V <sub>av34</sub>                                  | pc/h             | (Equation 25                                     | -4 or 25-5)              |  | V <sub>3</sub> or V <sub>av34</sub> |                                      | 2                 | 042 pc/h (Equ                          | ation 25-15                   | or 25-16                           |
| Is $V_3$ or $V_{av34} > 2.7$   | 00 pc/h?         | s 🗆 No   |                          |  |                                     | $_{24} > 2.7$                        |                   | TYes ✓ No                              |                               |                                    |
| Is $V_3$ or $V_{av34} > 1.5$   |                  |  |                          |  |                                     |                                      |                   | Tyes  ✓ No                             |                               |                                    |
| If Yes,V <sub>12a</sub> =  | · <del>-</del>   | (Equation 25                                     | -8)                      |  | If Yes,V <sub>12a</sub> =           |                                      |                   | oc/h (Equation                         | 25-18)                        |                                    |
| Capacity Ch  |                  | ( 1  | -,                       |  | Capacity                            |                                      |                   | ( 1                                    | /                             |                                    |
| Capacity City  | Actual           | C.   | apacity                  | LOS F?   | Joapaon                             | , 0                                  | Actual            | Ca                                     | pacity                        | LOS F                              |
|  | 7101441          | † Ť  | apaonj                   | 1 20011  | V <sub>F</sub>                      |                                      | 5764              | Exhibit 25-1                           | 1                             | No                                 |
| V <sub>FO</sub>  |                  | Exhibit 25-7                                     |                          |  | $V_{FO} = V_{F}$                    | - V                                  | 4732              | Exhibit 25-1                           | _                             | No                                 |
| Y FO   |                  | LAHIDIT 25-7                                     |                          |  |                                     | <sup>v</sup> R                       |                   | <del></del>                            |                               |                                    |
|  | <u> </u>         |  |                          |  | V <sub>R</sub>                      |                                      | 1032              | Exhibit 25-3                           |                               | No                                 |
| Flow Enterin   | 1                | 1  |                          | 1 , , , , , =  | Flow En                             | -1                                   |                   | rge Influen                            |                               | 10.00                              |
|  | Actual           | _  | Desirable                | Violation?   | 1                                   |                                      | Actual            | Max Desiral                            |                               | Violation <sup>2</sup>             |
| V <sub>R12</sub>   | <u> </u>         | Exhibit 25-7                                     |                          |  | V <sub>12</sub>                     |                                      | 3722              | Exhibit 25-14                          | 4400:All                      | No                                 |
| Level of Serv  |                  |  |                          |  | +                                   |                                      |                   | eterminatio                            |                               | -)                                 |
| $D_R = 5.475 + 0$  |                  | 0.0078 V <sub>12</sub> -                         | 0.00627 L <sub>A</sub>   |  |                                     | O <sub>R</sub> = 4                   | 4.252 + 0         | 0.0086 V <sub>12</sub> - 0.            | .009 L <sub>D</sub>           |                                    |
| $D_R = (pc/m)$   | i/ln)            |  |                          |  | $D_R = 33$                          | .6 (pc                               | :/mi/ln)          |  |                               |                                    |
| LOS = (Exhib   | oit 25-4)        |  |                          |  | LOS = D                             | (Exhi                                | bit 25-4)         |  |                               |                                    |
| Speed Deter  | mination         |  |                          |  | Speed D                             | )eter                                | minatio           | on                                     |                               |                                    |
| $M_S = (Exibit 2)$   | <br>25-19)       |  |                          |  | D <sub>s</sub> = 0.4                | 456 (E                               | xhibit 25         | -19)                                   |                               |                                    |
| · ·  | hibit 25-19)     |  |                          |  |                                     | •                                    | n (Exhibit        | ,                                      |                               |                                    |
|  | hibit 25-19)     |  |                          |  | 1                                   | -                                    | (Exhibit          |  |                               |                                    |
|  | hibit 25-19)     |  |                          |  | 1.                                  | -                                    | i (Exhibit        |  |                               |                                    |
| S = mph(Ex)  |                  |  |                          |  |                                     |                                      |                   |  |                               |                                    |

| General Infor  | mation                           |                          |                          | Site Infor  |                                     |                     |                    |  |                     |                                    |
|--|----------------------------------|--------------------------|--------------------------|---|-------------------------------------|---------------------|--------------------|--|---------------------|------------------------------------|
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioc | 02/15                            |                          | J                        | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year | !<br>1                              | Exit 4 S<br>NYSD(   |                    |  |                     |                                    |
| Project Description  | Exit 4                           |                          |                          |   |                                     |                     |                    |  |                     |                                    |
| Inputs   |                                  | ,                        |                          |   |                                     |                     |                    |  |                     |                                    |
| Upstream Adj Ramp  |                                  | Terrain: Leve            |                          |   |                                     |                     |                    |  | Downstrea<br>Ramp   | m Adj                              |
| ☐ Yes ☐ Or   |                                  |                          |                          |   |                                     |                     |                    |  | ✓ Yes               | ☑ On                               |
| ✓ No ☐ Of  | f                                |                          |                          |   |                                     |                     |                    |  | □ No                | ☐ Off                              |
| L <sub>up</sub> = ft   |                                  | S                        | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4                 | 0 0 mr              | ıh                 |  | L <sub>down</sub> = | 1820 ft                            |
| V <sub>u</sub> = veh/h   |                                  |                          | Sketch (                 | show lanes, L <sub>A</sub>                                  |                                     | 0.0 111             |                    |  | V <sub>D</sub> =    | 510 <b>veh</b> /l                  |
| Conversion to  |                                  | der Base (               | Conditions               |   | •                                   | -                   |                    | Y                                      | •                   |                                    |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                      | Terrain                  | %Truck  | %Rv                                 | <u> </u>            | f <sub>HV</sub>    | f <sub>p</sub>                         | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 5600                             | 0.92                     | Level                    | 2   | 0                                   | _                   | 990                | 1.00                                   | 614                 |                                    |
| Ramp<br>UpStream   | 690                              | 0.92                     | Level                    | 2   | 0                                   | 0.                  | 990                | 1.00                                   | 75                  | 7                                  |
| DownStream   | 510                              | 0.93                     | Level                    | 5   | 0                                   |                     | 976                | 1.00                                   | 56                  | 2                                  |
| Downoulean   |                                  | Merge Areas              | LCVCI                    | J   |                                     | 0.                  |                    | Diverge Areas                          | 30                  |                                    |
| Estimation of  | f v <sub>12</sub>                | <u> </u>                 |                          |   | Estimati                            | ion c               | of V <sub>12</sub> | <u> </u>                               |                     |                                    |
|  | V <sub>12</sub> = V <sub>F</sub> | (P <sub>EM</sub> )       |                          |   | †                                   |                     |                    | = V <sub>R</sub> + (V <sub>F</sub> - V | D)P_D               |                                    |
| L <sub>EQ</sub> =  |                                  | 、 ™ ⁄<br>ation 25-2 or   | 25-3)                    |   | L <sub>EQ</sub> =                   |                     |                    | Equation 25-8                          |                     |                                    |
| P <sub>FM</sub> =  |                                  | Equation (E              |                          |   | P <sub>FD</sub> =                   |                     |                    | .571 using Ed                          |                     | bit 25-12)                         |
| V <sub>12</sub> =  | pc/h                             | . ,                      | ,                        |   | V <sub>12</sub> =                   |                     |                    | 838 pc/h                               | ,                   |                                    |
| V <sub>3</sub> or V <sub>av34</sub>                                    | pc/h                             | (Equation 25             | -4 or 25-5)              |   | V <sub>3</sub> or V <sub>av34</sub> |                     |                    | 310  pc/h (Equ                         | ation 25-15         | or 25-16                           |
| Is $V_3$ or $V_{av34} > 2,70$  |                                  |                          |                          |   |                                     | <sub>84</sub> > 2,7 |                    | Tyes ☑ No                              |                     |                                    |
| Is $V_3$ or $V_{av34} > 1.5$   |                                  |                          |                          |   |                                     |                     |                    | Tyes  ✓ No                             |                     |                                    |
| If Yes,V <sub>12a</sub> =  | pc/h                             | (Equation 25             | -8)                      |   | If Yes,V <sub>12a</sub> =           |                     |                    | oc/h (Equation                         | 25-18)              |                                    |
| Capacity Che   | cks                              |                          |                          |   | Capacity                            |                     | ecks               |  |                     |                                    |
|  | Actual                           | C                        | apacity                  | LOS F?  |                                     |                     | Actual             | Ca                                     | pacity              | LOS F                              |
|  |                                  |                          |                          |   | V <sub>F</sub>                      |                     | 6148               | Exhibit 25-1                           | 4 6780              | No                                 |
| V <sub>FO</sub>  |                                  | Exhibit 25-7             |                          |   | $V_{FO} = V_{F}$                    | - V <sub>R</sub>    | 5391               | Exhibit 25-1                           | 4 6780              | No                                 |
|  |                                  |                          |                          |   | V <sub>R</sub>                      |                     | 757                | Exhibit 25-3                           | 3 2100              | No                                 |
| Flow Entering  | a Merae In                       | fluence A                | rea                      | <u> </u>  | Flow En                             | terir               | a Dive             | rge Influen                            | ce Area             |                                    |
|  | Actual                           | 1                        | Desirable                | Violation?  |                                     | 1                   | Actual             | Max Desiral                            |                     | Violation                          |
| V <sub>R12</sub>   |                                  | Exhibit 25-7             |                          |   | V <sub>12</sub>                     | ;                   | 3838               | Exhibit 25-14                          | 4400:All            | No                                 |
| Level of Serv  | ice Detern                       | nination (i              | f not F)                 |   | Level of                            | Ser                 | vice De            | eterminatio                            | n (if not l         | F)                                 |
| $D_R = 5.475 + 0.$   | 00734 v <sub>R</sub> +           | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |   |                                     | $D_R = 4$           | 1.252 + 0          | 0.0086 V <sub>12</sub> - 0.            | 009 L <sub>D</sub>  |                                    |
| D <sub>R</sub> = (pc/mi/   | ln)                              |                          |                          |   | D <sub>R</sub> = 31                 | .0 (pc              | /mi/ln)            |  |                     |                                    |
| LOS = <b>(Exhib</b> i  | t 25-4)                          |                          |                          |   | LOS = D                             | (Exhi               | bit 25-4)          |  |                     |                                    |
| Speed Detern   | nination                         |                          | •                        |   | Speed D                             | eter                | minati             | on                                     |                     |                                    |
| $M_S = $ (Exibit 2   | 5-19)                            |                          |                          |   | $D_S = 0.2$                         | 431 <b>(E</b>       | xhibit 25          | -19)                                   |                     |                                    |
| o .  | ibit 25-19)                      |                          |                          |   | $S_R = 50$                          | 0.0 mph             | (Exhibit           | 25-19)                                 |                     |                                    |
|  |                                  |                          |                          |   | $S_0 = 56$                          | 3 mnh               | (Exhibit           | 25-19)                                 |                     |                                    |
| $S_0 = mph (Exh$   | IIDIL 25-19)                     |                          |                          |   | -0 30                               | .J IIIpi            | (EXIIIDI           | =0 .0,                                 |                     |                                    |

|  | RAI                                | MPS AND I                     | RAMP JUN                | CTIONS W  | ORKSHE                                | ET   |  |                                 |                                    |
|--|------------------------------------|-------------------------------|-------------------------|---|---------------------------------------|--|--|---------------------------------|------------------------------------|
| General Infor  |                                    |                               | . 30.1                  | Site Infor  |                                       |  |  |                                 |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioo | SEB<br>CHA<br>02/15<br>I AM        |                               | Ju<br>Ju                | eeway/Dir of Tr<br>inction<br>irisdiction<br>nalysis Year | avel                                  | Southbound I-8<br>Exit 4 SB On-R<br>NYSDOT<br>2026 Diamond |  |                                 |                                    |
| Project Description  | Exit 4                             |                               |                         |   |                                       |  |  |                                 |                                    |
| Inputs   |                                    | Terrain: Level                |                         |   |                                       |  |  | D                               | A -I:                              |
| Jpstream Adj Ramp  |                                    | Torium. Lovor                 |                         |   |                                       |  |  | Downstre<br>Ramp                | am Adj                             |
| Yes Or   | 1                                  |                               |                         |   |                                       |  |  | ☐ Yes                           | □ On                               |
| □ No     Of  | f                                  |                               |                         |   |                                       |  |  | ✓ No                            | ☐ Off                              |
|  |                                    |                               |                         |   |                                       |  |  | 1                               |                                    |
| <sub>-up</sub> = 1820  | ft                                 |                               | <sub>F</sub> = 56.0 mph |   | S <sub>FR</sub> = 4                   | 10 0 mnh   |  | L <sub>down</sub> =             | ft                                 |
| $V_{u} = 690 \text{ v}$  | eh/h                               |                               | •                       | show lanes, L <sub>A</sub> ,                              |                                       | o.o mpn  |  | $V_D =$                         | veh/h                              |
| Conversion t   | o pc/h Uni                         | der Base C                    |                         | _A  | -D' - R' - 1'                         |  |  |                                 |                                    |
| (pc/h)   | V                                  | PHF                           | Terrain                 | %Truck  | %Rv                                   | f <sub>HV</sub>  | fp                                     | v = V/PHF                       | x f <sub>HV</sub> x f <sub>p</sub> |
| • •  | (Veh/hr)                           |                               |                         |   | 0                                     | 0.990  | <del></del>                            | +                               | <u>'</u>                           |
| Freeway<br>Ramp  | 4900<br>510                        | 0.92                          | Level<br>Level          | 5   | 0                                     | 0.990  | 1.00                                   |                                 | 5379<br>562                        |
| UpStream   | 690                                | 0.73                          | Level                   | 2   | 0                                     | 0.990  | 1.00                                   |                                 | 757                                |
| DownStream   |                                    |                               |                         |   |                                       |  |  |                                 |                                    |
|  |                                    | Merge Areas                   |                         |   |                                       |  | Diverge Areas                          | 3                               |                                    |
| Estimation of  | 12 12                              |                               |                         |   | Estimat                               | ion of v <sub>12</sub>                                     |  |                                 |                                    |
|  | $V_{12} = V_F$                     | (P <sub>FM</sub> )            |                         |   |                                       | V <sub>12</sub>  | = V <sub>R</sub> + (V <sub>F</sub> - \ | / <sub>R</sub> )P <sub>FD</sub> |                                    |
| -EQ =  | 1540.59                            | (Equation 2                   | 25-2 or 25-3)           |   | L <sub>EQ</sub> =                     |  | (Equation 2                            |                                 | 9)                                 |
| P <sub>FM</sub> =  | 0.614                              | using Equation                | on (Exhibit 25-5)       |   | P <sub>FD</sub> =                     |  | using Equa                             | tion (Exhibit                   | 25-12)                             |
| / <sub>12</sub> =  | 3303                               |                               |                         |   | V <sub>12</sub> =                     |  | pc/h                                   |                                 |                                    |
| <sub>3</sub> or V <sub>av34</sub>                                      | 2076 <sub> </sub><br>5)            | pc/h (Equation                | n 25-4 or 25-           |   | $V_3$ or $V_{av34}$                   |  | pc/h (Equation                         | n 25-15 or 25                   | -16)                               |
| ls V <sub>3</sub> or V <sub>av34</sub> > 2,70                          |                                    | s 🗹 No                        |                         |   | Is V <sub>3</sub> or V <sub>av3</sub> | $_{34} > 2,700 \text{ pc/h}^{\circ}$                       | ? ☐ Yes ☐ N                            | lo                              |                                    |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                           |                                    |                               |                         |   |                                       |  | ☐ Yes ☐ N                              |                                 |                                    |
| f Yes,V <sub>12a</sub> =   | pc/h                               | (Equation 25-                 | 8)                      |   | If Yes,V <sub>12a</sub> =             | :  | pc/h (Equat                            | ion 25-18)                      |                                    |
| Capacity Che   | cks                                |                               |                         |   | Capacit                               | y Checks   |  |                                 |                                    |
|  | Actual                             | Ca                            | pacity                  | LOS F?  | ļ                                     | Actu   |  | apacity                         | LOS F                              |
|  |                                    |                               |                         |   | V <sub>F</sub>                        |  | Exhibit 25                             | 5-14                            |                                    |
| $V_{FO}$   | 5941                               | Exhibit 25-7                  |                         | No  | $V_{FO} = V_{F}$                      | - V <sub>R</sub>   | Exhibit 25                             | 5-14                            |                                    |
|  |                                    |                               |                         |   | V <sub>R</sub>                        |  | Exhibit 2                              |                                 |                                    |
| Flow Entering  |                                    |                               |                         | T   | Flow En                               |  | erge Influe                            |                                 |                                    |
| W  | Actual                             |                               | esirable                | Violation?  |                                       | Actual   | Max De                                 | sirable<br>                     | Violation <sup>2</sup>             |
| V <sub>R12</sub>   | 3865                               | Exhibit 25-7                  | 4600:All                | No  | V <sub>12</sub>                       | Comitee t  | Exhibit 25-14                          | ion /if :::                     | <u> </u>                           |
| Level of Serv  |                                    |                               |                         |   | 1                                     |  | Determinat                             | <del></del>                     | or r)                              |
| ••   |                                    | 0.0078 V <sub>12</sub> - 0.00 | OZILA                   |   |                                       |  | - 0.0086 V <sub>12</sub> -             | o.oos L <sub>D</sub>            |                                    |
| $O_R = 27.2 \text{ (pc)}$<br>OS = C  (Exhil)                           |                                    |                               |                         |   |                                       | c/mi/ln)<br>Exhibit 25-4)                                  |  |                                 |                                    |
| Speed Deterr   |                                    |                               |                         |   |                                       | Determina  | tion                                   |                                 |                                    |
|  |                                    |                               |                         |   | <del></del>                           | xhibit 25-19)  |  |                                 |                                    |
| $M_S = 0.403 \text{ (Exi}$   |                                    |                               |                         |   |                                       | ph (Exhibit 25-  | 19)                                    |                                 |                                    |
|  | (Exhibit 25-19)<br>(Exhibit 25-19) |                               |                         |   |                                       | ph (Exhibit 25-  |  |                                 |                                    |
|  | (Exhibit 25-19)                    |                               |                         |   |                                       | ph (Exhibit 25-  | •                                      |                                 |                                    |
| S = 50.4  mph  |                                    |                               |                         |   |                                       |  |  |                                 |                                    |

|  |                         | RAI                             | MPS AND                      | RAMP JUNG                | TIONS W  | OKKSHE                              | <u> </u>         |                   |                                    |   |                                      |
|--|-------------------------|---------------------------------|------------------------------|--------------------------|--|-------------------------------------|------------------|-------------------|------------------------------------|---|--------------------------------------|
| General  | Inforn                  | nation                          |                              |                          | Site Infor   | mation                              |                  |                   |                                    |   |                                      |
| Analyst<br>Agency or C<br>Date Perforr<br>Analysis Tim | med                     | SEB<br>CHA<br>02/15<br>AM       | /12                          | Jui<br>Jui               | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | E<br>N                              |                  |                   | mp                                 |   |                                      |
| Project Desc   | cription E              | xit 4                           |                              |                          |  |                                     |                  |                   |                                    |   |                                      |
| Inputs   |                         |                                 |                              |                          |  |                                     |                  |                   |                                    |   |                                      |
| Jpstream A   | •                       |                                 | Terrain: Level               |                          |  |                                     |                  |                   |                                    | Downstre<br>Ramp                        | eam Adj                              |
| Yes  | □ On                    |                                 |                              |                          |  |                                     |                  |                   |                                    | ✓ Yes                                   | ☐ On                                 |
| ™ No   | ☐ Off                   |                                 |                              |                          |  |                                     |                  |                   |                                    | □ No                                    | ✓ Off                                |
| -up =  | ft                      |                                 | S                            | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 40                | 0.0 mp           | h                 |                                    | L <sub>down</sub> =                     | 6100 ft                              |
| √ <sub>u</sub> =                                       | veh/h                   |                                 |                              | Sketch (s                | show lanes, L <sub>A</sub> ,                           | $L_{D'}V_{R'}V_{f}$                 |                  |                   |                                    | $V_D =$                                 | 690 veh/h                            |
| Convers  | sion to                 | pc/h Unc                        | ler Base C                   | Conditions               |  |                                     |                  |                   |                                    |   |                                      |
| (pc/h  | h)                      | V<br>(Veh/hr)                   | PHF                          | Terrain                  | %Truck   | %Rv                                 | f                | HV                | f <sub>p</sub>                     | v = V/PH                                | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  |                         | 5300                            | 0.92                         | Level                    | 2  | 0                                   | 0.9              | 90                | 1.00                               |   | 5818                                 |
| Ramp   |                         | 300                             | 0.93                         | Level                    | 3  | 0                                   | 0.9              | 85                | 1.00                               | <u> </u>                                | 327                                  |
| UpStream   |                         |                                 |                              |                          |  |                                     |                  |                   |                                    |   |                                      |
| DownStrear   | m                       | 690                             | 0.92                         | Level                    | 2  | 0                                   | 0.9              |                   | 1.00                               |   | 757                                  |
| Estimat  | ion of                  |                                 | Merge Areas                  |                          |  | Estimati                            | on o             |                   | Diverge Area                       | S                                       |                                      |
| _Sumat   | ion or                  |                                 |                              |                          |  | ESumau                              | OII O            | 1 V <sub>12</sub> |                                    |   |                                      |
|  |                         | $V_{12} = V_{F}$                | (P <sub>FM</sub> )           |                          |  |                                     |                  | V <sub>12</sub> = | V <sub>R</sub> + (V <sub>F</sub> - | V <sub>R</sub> )P <sub>ED</sub>         |                                      |
| -EQ =  |                         | 3043.83                         | (Equation :                  | 25-2 or 25-3)            |  | L <sub>EQ</sub> =                   |                  |                   | (Equation 2                        |   | 9)                                   |
| P <sub>FM</sub> =                                      |                         | 0.614                           | using Equati                 | on (Exhibit 25-5)        |  | P <sub>FD</sub> =                   |                  |                   | using Equa                         |   |                                      |
| / <sub>12</sub> =                                      |                         | 3572 p                          | oc/h                         |                          |  | V <sub>12</sub> =                   |                  |                   | pc/h                               | (=,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | . 20 . 2,                            |
| / <sub>3</sub> or V <sub>av34</sub>                    |                         | 2246 p                          | oc/h (Equatio                | n 25-4 or 25-            |  | V <sub>3</sub> or V <sub>av34</sub> |                  |                   | pc/h (Equation                     | n 25-15 or 21                           | 5-16)                                |
|  |                         | 5)                              | _                            |                          |  |                                     | < 2.7I           |                   | Yes I                              |   | 5-10)                                |
|  |                         | pc/h? ☐ Yes                     |                              |                          |  |                                     |                  |                   |                                    |   |                                      |
| Is V <sub>3</sub> or V <sub>av</sub>                   | <sub>34</sub> > 1.5 * \ | $I_{12}/2  \square \text{ Yes}$ | s 🗹 No                       |                          |  |                                     |                  |                   | ☐ Yes ☐ N                          |   |                                      |
| Yes,V <sub>12a</sub> =                                 | =                       | pc/h (                          | Equation 25                  | -8)                      |  | If Yes,V <sub>12a</sub> =           |                  |                   | pc/h (Equa                         | tion 25-18)                             |                                      |
| Capacit  | y Chec                  | ks                              |                              |                          |  | Capacity                            | / Che            | ecks              |                                    |   |                                      |
|  |                         | Actual                          | Ca                           | ıpacity                  | LOS F?   |                                     |                  | Actual            | (                                  | Capacity                                | LOS F                                |
|  |                         |                                 |                              |                          |  | $V_{F}$                             |                  |                   | Exhibit 2                          | 5-14                                    |                                      |
| V <sub>FC</sub>  | ,                       | 6145                            | Exhibit 25-7                 |                          | No   | $V_{FO} = V_{F}$                    | - V <sub>R</sub> |                   | Exhibit 2                          | 5-14                                    |                                      |
|  |                         |                                 |                              |                          |  | V <sub>R</sub>                      |                  |                   | Exhibit 2                          | 5-3                                     |                                      |
| Elow En  | toring                  | Morgo In                        | fluence A                    |                          | <u>.                                    </u>           |                                     | torin            | a Dive            | rge Influ                          |   | <u></u>                              |
| 10 W EI  | Termy                   | Actual                          |                              | Desirable                | Violation?   | I IOW EII                           | 1                | ctual             | Max De                             |   | Violation?                           |
| V <sub>R1</sub>  | _                       | 3899                            | Exhibit 25-7                 | 4600:All                 | No   | V <sub>12</sub>                     |                  | Judi              | Exhibit 25-14                      |   | violation:                           |
| YR1  | f Sonii                 |                                 | nination (i                  |                          | 140  |                                     | Sor              | ice D             | eterminat                          |   | )<br>of <b>F</b> )                   |
|  |                         |                                 | 0.0078 V <sub>12</sub> - 0.0 |                          |  |                                     |                  |                   |                                    |   | <i>J(1)</i>                          |
|  |                         |                                 | 1.0070 V <sub>12</sub> - 0.0 | JUZI LA                  |  |                                     | • •              |                   | 0.0086 V <sub>12</sub>             | - 0.009 L <sub>D</sub>                  |                                      |
| IX.  | 27.6 (pc/n              | •                               |                              |                          |  |                                     | c/mi/lr          | •                 |                                    |   |                                      |
|  | C (Exhibit              |                                 |                              |                          |  |                                     | xhibit           |                   |                                    |   |                                      |
| Speed L  | Determ                  | ination                         |                              |                          |  | Speed D                             |                  |                   | on                                 |   |                                      |
| $M_{\rm S} = 0.$                                       | 409 (Exibi              | t 25-19)                        |                              |                          |  | $D_s = (E)$                         | xhibit 2         | 5-19)             |                                    |   |                                      |
| -  | 0.3 mph (E              | xhibit 25-19)                   |                              |                          |  | S <sub>R</sub> = mp                 | oh (Exh          | ibit 25-19        | )                                  |   |                                      |
|  | -                       | xhibit 25-19)                   |                              |                          |  | S <sub>0</sub> = mp                 | h (Exh           | ibit 25-19        | )                                  |   |                                      |
| U  |                         | xhibit 25-14)                   |                              |                          |  |                                     | h (Exh           | ibit 25-15        | )                                  |   |                                      |
|  |                         | /                               |                              |                          |  |                                     |                  |                   |                                    |   |                                      |

| Conversions to pc/h Under Base Conditions   Far Residence   Resi         |                          |                                 |                | FREEWA   | Y WEAV                               | /ING WOR                    | KSHEE          | Т                  |                             |              |  |  |
|--|--------------------------|---------------------------------|----------------|----------|--------------------------------------|-----------------------------|----------------|--------------------|-----------------------------|--------------|--|--|
| Conversions to pc/h Under Base Conditions   Far Residence   Resi         | Genera                   | Informat                        | ion            |          |                                      | Site Info                   | rmation        |                    |                             |              |  |  |
| Veaving sequence   Normal            | Date Perfor              | med                             | CHA<br>02/15/  | 12       |                                      | Weaving Seg<br>Jurisdiction | Location       | Exit 2<br>NYSD     | Exit 2E on to 2W off NYSDOT |              |  |  |
| Veaving number of lanes, N   A   State   Volume ratio, VR   Weaving ratio, R   O.26  | Inputs                   |                                 |                |          |                                      |                             |                |                    |                             |              |  |  |
| Crith   V  | Weaving nu               | mber of lanes,                  | 11 .           | 4<br>815 | Volume ratio, VR<br>Weaving ratio, R |                             |                |                    | 0.26                        |              |  |  |
| 1.5  | Conver                   | sions to p                      | c/h Unde       | r Base C | onditio                              |                             |                |                    |                             | _            |  |  |
| 1.00   0   0.92   2   0   1.5   1.2   0.990   1.00   0   0   0.92   2   0   1.5   1.2   0.990   1.00   735   0.92   2   0   1.5   1.2   0.990   1.00   340   0.92   0   0.975   0.990   0.99         | (pc/h)                   | V                               | PHF            | Truck %  | RV %                                 | E <sub>T</sub>              | E <sub>R</sub> | ${\sf f}_{\sf HV}$ | fp                          | ٧            |  |  |
| 1.00   0   0.92   2   0   1.5   1.2   0.990   1.00   0   0   0.92   2   0   1.5   1.2   0.990   1.00   735   0.92   2   0   1.5   1.2   0.990   1.00   340   0.92   0   0.975   0.990   0.99         | $V_{o1}$                 | 2790                            | 0.92           | 2        | 0                                    | 1.5                         | 1.2            | 0.990              | 1.00                        | 3062         |  |  |
| March   670   0.92   2   0   1.5   1.2   0.990   1.00   735     March   2   310   0.92   2   0   1.5   1.2   0.990   1.00   340     March   2   1075   V <sub>nw</sub>   3062     March   3062   4137     Veaving and Non-Weaving Speeds   Unconstrained   Weaving (i = w)   Non-Weaving (i = mw)   Weaving (i = w)   Non-Weaving (i = mw)     (Exhibit 24-6)   0.15   0.0035   (Exhibit 24-6)   0.20   4.00   (Exhibit 24-6)   0.97   1.30   (Exhibit 24-6)   0.98   0.48   eaving and non-weaving   38.21   46.09   eaving and non-weaving   38.21   46.09   eaving and non-weaving   38.21   46.09   eaving and non-weaving   38.21   46.09   eaving and non-weaving   38.21   46.09   eaving and non-weaving   38.21   46.09   eaving and non-weaving   38.21   46.09   eaving segment Speed, Density, Level of Service, and Capacity  | $V_{o2}$                 | 0                               | 0.92           | 2        | 0                                    | 1.5                         | 1.2            | 0.990              | 1.00                        | 0            |  |  |
| March   1075   V   Nu  | V <sub>w1</sub>          | 670                             | 0.92           | 2        | 0                                    | 1.5                         | 1.2            | 0.990              | 1.00                        | 735          |  |  |
| 1075   V <sub>nw</sub>   3062   4137 | V <sub>w2</sub>          | 310                             | 0.92           | 2        | 0                                    | 1.5                         | 1.2            | 0.990              | 1.00                        | 340          |  |  |
| Veaving and Non-Weaving Speeds   Unconstrained   Constrained   Weaving (i = w)   Non-Weaving (i = nw)   Weaving (i = w)   Non-Weaving (i = nw)   Weaving (i = w)   Non-Weaving (i = nw)   Non-Weaving (i =           | V <sub>w</sub>           |                                 |                |          | 1075                                 | V <sub>nw</sub>             |                |                    |                             | 3062         |  |  |
| Unconstrained Constrained  Weaving (i = w) Non-Weaving (i = nw) Weaving (i = w) Non-Weaving ( = nw)  (Exhibit 24-6) 0.15 0.0035  (Exhibit 24-6) 2.20 4.00  (Exhibit 24-6) 0.97 1.30  (Exhibit 24-6) 0.80 0.75  eaving intensity factor, Wi 0.98 0.48  eaving and non-weaving eads, S (mi/h)  umber of lanes required for unconstrained operation, Nw 1.33  laximum number of lanes, Nw (max) 1.40  If Nw < Nw(max) unconstrained operation  Veaving Segment Speed, Density, Level of Service, and Capacity  //eaving segment density, D (pc/mi/ln) 23.64  evel of service, LOS  apacity as a 15-minute flow rate, c (veh/h) 6348  apacity as a full-hour volume, c <sub>h</sub> (veh/h) 5840   | V                        |                                 |                |          |                                      | TIW                         |                |                    |                             | 4137         |  |  |
| Weaving (i = w)   Non-Weaving (i = nw)   Weaving (i = w)   Non-Weaving ( = nw)   | Weavin                   | g and No                        | n-Weavin       | g Speeds | <u> </u>                             |                             |                |                    |                             |              |  |  |
| (Exhibit 24-6)       0.15       0.0035         (Exhibit 24-6)       2.20       4.00         (Exhibit 24-6)       0.97       1.30         (Exhibit 24-6)       0.80       0.75         eaving intensity factor, Wi       0.98       0.48         eaving and non-weaving eachs, Si (mi/h)       38.21       46.09         umber of lanes required for unconstrained operation, Nw aximum number of lanes, Nw (max)       1.33         laximum number of lanes, Nw (max)       1.40         If Nw < Nw(max) unconstrained operation   |                          |                                 |                |          |                                      |                             |                |                    |                             |              |  |  |
| (Exhibit 24-6) (Exhi        | /E 13330                 | 4.()                            | <del></del>    |          | 4                                    |                             | Weavi          | ng (i = w)         | Non-Wea                     | ving ( = nw) |  |  |
| (Exhibit 24-6) 0.97 1.30 (Exhibit 24-6) 0.80 0.75 eaving intensity factor, Wi 0.98 0.48 eaving and non-weaving eeds, Si (mi/h) 38.21 46.09 eeds, Si (mi/h) 1.33 1.40 If Nw < Nw(max) unconstrained operation If Nw > Nw (max) constrained operation If Nw >        |                          |                                 | <del>-</del>   |          | 1                                    |                             |                |                    |                             |              |  |  |
| (Exhibit 24-6) 0.80 0.75 eaving intensity factor, Wi 0.98 0.48 eaving and non-weaving eeds, Si (mi/h) 38.21 46.09  umber of lanes required for unconstrained operation, Nw 1.33 laximum number of lanes, Nw (max) 1.40  If Nw < Nw(max) unconstrained operation  Veaving Segment Speed, Density, Level of Service, and Capacity  //eaving segment density, D (pc/mi/ln) 23.64 evel of service, LOS apacity of base condition, c <sub>b</sub> (pc/h) 6411 apacity as a 15-minute flow rate, c (veh/h) 6348 apacity as a full-hour volume, c <sub>h</sub> (veh/h) 5840   |                          |                                 | <del>-</del>   |          | 1                                    |                             |                |                    | 1                           |              |  |  |
| eaving intensity factor, Wi 0.98 0.48 eaving and non-weaving eeds, Si (mi/h) 38.21 46.09  umber of lanes required for unconstrained operation, Nw 1.33 laximum number of lanes, Nw (max) 1.40  If Nw < Nw(max) unconstrained operation if Nw > Nw (max) constrained operation  Veaving Segment Speed, Density, Level of Service, and Capacity  /eaving segment speed, S (mi/h) 43.74  /eaving segment density, D (pc/mi/ln) 23.64 evel of service, LOS  apacity of base condition, $c_b$ (pc/h) 6411  apacity as a 15-minute flow rate, c (veh/h) 6348  apacity as a full-hour volume, $c_h$ (veh/h) 5840  | _                        |                                 | <del>-</del>   |          | 1                                    |                             |                |                    |                             |              |  |  |
| umber of lanes required for unconstrained operation, Nw 1.33 laximum number of lanes, Nw (max) 1.40  If Nw < Nw(max) unconstrained operation if Nw > Nw (max) constrained operation  Veaving Segment Speed, Density, Level of Service, and Capacity  /eaving segment speed, S (mi/h) 43.74  /eaving segment density, D (pc/mi/ln) 23.64  evel of service, LOS  apacity of base condition, $c_b$ (pc/h) 6411  apacity as a 15-minute flow rate, $c$ (veh/h) 6348  apacity as a full-hour volume, $c_h$ (veh/h) 5840   | •                        |                                 | 0.98           | }        | <u> </u>                             |                             |                |                    |                             |              |  |  |
| umber of lanes required for unconstrained operation, Nw 1.33 laximum number of lanes, Nw (max) 1.40  If Nw < Nw(max) unconstrained operation if Nw > Nw (max) constrained operation  Veaving Segment Speed, Density, Level of Service, and Capacity  /eaving segment speed, S (mi/h) 43.74  /eaving segment density, D (pc/mi/ln) 23.64  evel of service, LOS C C  apacity of base condition, $c_b$ (pc/h) 6411  apacity as a 15-minute flow rate, c (veh/h) 6348  apacity as a full-hour volume, $c_h$ (veh/h) 5840   |                          |                                 | 38.2           | 1        | 40                                   | 5.09                        |                |                    |                             |              |  |  |
| Veaving Segment Speed, Density, Level of Service, and Capacity/eaving segment speed, S (mi/h) $43.74$ /eaving segment density, D (pc/mi/ln) $23.64$ evel of service, LOSCapacity of base condition, $c_b$ (pc/h) $6411$ apacity as a 15-minute flow rate, c (veh/h) $6348$ apacity as a full-hour volume, $c_h$ (veh/h) $5840$   | Number of I<br>Maximum n | anes required<br>umber of lanes | s, Nw (max)    |          |                                      | 1.40                        | _              |                    |                             |              |  |  |
| /eaving segment speed, S (mi/h) 43.74 /eaving segment density, D (pc/mi/ln) 23.64 evel of service, LOS C apacity of base condition, c <sub>b</sub> (pc/h) 6411 apacity as a 15-minute flow rate, c (veh/h) 6348 apacity as a full-hour volume, c <sub>h</sub> (veh/h) 5840   |                          |                                 | • •            |          |                                      |                             |                | <u> </u>           | rained operati              | ion          |  |  |
| /eaving segment density, D (pc/mi/ln)  23.64 evel of service, LOS  apacity of base condition, c <sub>b</sub> (pc/h)  apacity as a 15-minute flow rate, c (veh/h)  apacity as a full-hour volume, c <sub>h</sub> (veh/h)  5840  | weavin                   | g Segmer                        | nt Speed,      | Density, |                                      | T Service,                  | and Cap        | pacity             |                             |              |  |  |
| evel of service, LOS  apacity of base condition, c <sub>b</sub> (pc/h)  apacity as a 15-minute flow rate, c (veh/h)  apacity as a full-hour volume, c <sub>h</sub> (veh/h)  5840   |                          |                                 |                |          |                                      |                             |                |                    |                             |              |  |  |
| apacity of base condition, c <sub>b</sub> (pc/h) 6411 apacity as a 15-minute flow rate, c (veh/h) 6348 apacity as a full-hour volume, c <sub>h</sub> (veh/h) 5840  |                          | <u> </u>                        | , в (релили)   |          | <del> </del>                         |                             |                |                    |                             |              |  |  |
| apacity as a 15-minute flow rate, c (veh/h) 6348 apacity as a full-hour volume, c <sub>h</sub> (veh/h) 5840  |                          |                                 | ı. c. (pc/h)   |          |                                      |                             |                |                    |                             |              |  |  |
| apacity as a full-hour volume, c <sub>h</sub> (veh/h) 5840   |                          |                                 | D -            | n/h)     |                                      |                             |                |                    |                             |              |  |  |
| The second secon       |                          |                                 |                |          |                                      |                             |                |                    |                             |              |  |  |
| A JI E S   | Notes                    |                                 | - , - N ( , n, | ,        | 1 55.5                               |                             |                |                    |                             |              |  |  |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|   |   |                            | FREEWA                | Y WEAV   | ING WOR  | KSHEE          | Τ               |   |              |  |
|---|---|----------------------------|-----------------------|----------|--|----------------|-----------------|---|--------------|--|
| General   | Informat  | ion                        |                       |          | Site Info  | rmation        |                 |   |              |  |
| Analyst<br>Agency/Com<br>Date Perform<br>Analysis Tim | ned   | SEB<br>CHA<br>02/15/<br>AM | 12                    |          | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | Exit 2'<br>NYSD | I-87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2026 Diamond |              |  |
| Inputs  |   |                            |                       |          |  |                |                 |   |              |  |
|   | e-flow speed, s<br>nber of lanes,<br>length, L (ft) | 11                         | 56<br>4<br>810<br>Lev |          | Weaving type<br>Volume ratio,<br>Weaving ratio             | , VR           |                 | A<br>0.:<br>0.:   |              |  |
| Convers   | ions to p   | c/h Unde                   | r Base C              | ondition | าร   |                |                 |   |              |  |
| (pc/h)  | V   | PHF                        | Truck %               | RV %     | E <sub>T</sub>   | E <sub>R</sub> | $f_{HV}$        | fp  | V            |  |
| $V_{o1}$  | 3550  | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990           | 1.00  | 3897         |  |
| $V_{o2}$  | 0   | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990           | 1.00  | 0            |  |
| $V_{w1}$  | 750   | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990           | 1.00  | 823          |  |
| $V_{w2}$  | 340   | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990           | 1.00  | 373          |  |
| V <sub>w</sub>  | 1   |                            |                       | 1196     | $V_{nw}$   |                | •               | •   | 3897         |  |
| V   | 1   |                            |                       |          | ,  | ı              |                 |   | 5093         |  |
| Weaving   | and No  | n-Weavin                   | g Speeds              | 3        |  |                |                 |   |              |  |
|   |   |                            | Unconstr              |          |  |                |                 | trained   |              |  |
| o /F.,b;b;t 0.4                                       | ()  | Weaving                    |                       |          | ving (i = nw)  | Weavir         | ng (i = w)      | Non-Wea   | ving ( = nw) |  |
| a (Exhibit 24<br>b (Exhibit 24                        |   | 0.15<br>2.20               |                       |          | .00  |                |                 | <del>                                     </del>                  |              |  |
| c (Exhibit 24-  |   | 0.97                       |                       | <u> </u> | .30  |                |                 |   |              |  |
| d (Exhibit 24   | <u>,                                      </u>      | 0.80                       |                       |          | .75  |                |                 |   |              |  |
| Weaving intensity                                     |   | 1.16                       | )                     | 1        | .58  |                |                 |   |              |  |
| Weaving and nor<br>speeds, Si (mi/h)                  |   | 36.3                       | 5                     | 44       | 1.06   |                |                 |   |              |  |
| Number of la  | nes required  | for unconstrair            | ned operation,        | Nw       | 1.29   |                |                 |   |              |  |
|   | mber of lanes                                       | , ,                        |                       |          | 1.40   | = 36 N N       |                 |   |              |  |
|   |   | (max) unconst              |                       |          |  |                | v (max) constr  | rained operati  | on           |  |
| Weaving seg   | J Segmen  | S (mi/h)                   | Density,              | 41.97    | f Service,   | anu Cap        | acity           |   |              |  |
|   | ment density,                                       |                            |                       | 30.34    |  |                |                 |   |              |  |
| Level of serv   |   | , D (pomini)               |                       | D        |  |                |                 |   |              |  |
|   | ase condition                                       | n, c <sub>h</sub> (pc/h)   |                       | 6543     |  |                |                 |   |              |  |
|   |   | ow rate, c (veh            | n/h)                  | 6478     |  |                |                 |   |              |  |
|   |   | ume, c <sub>h</sub> (veh/h |                       | 5960     |  |                |                 |   |              |  |
| Notes   |   | .1                         |                       |          |  |                |                 |   |              |  |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

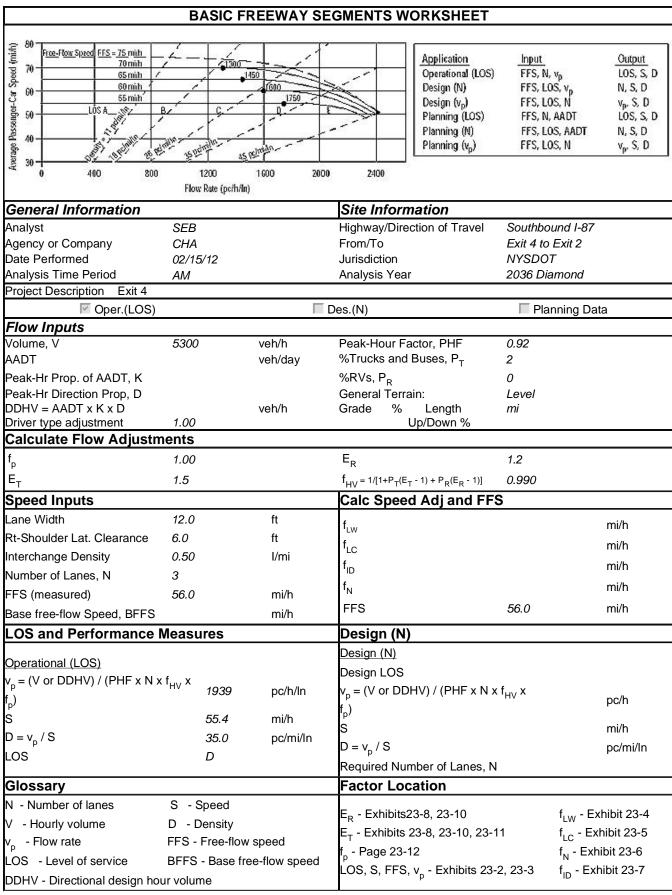
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|   | BASIC F  | REEWAY SE                                | GMENTS W  | ORKSHEET   |   |  |
|---|--|--|---|--|---|--|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 70 mith 65 mith 55 mith 55 mith 40                       | B C C  | 150<br>1750<br>1750<br>1750<br>1600 2000 | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, FFS, N, AA FFS, LOS, FFS, LOS, | v <sub>p</sub> N, S, D<br>N v <sub>p</sub> , S, D<br>.DT LOS, S, D<br>AADT N, S, D |
| General Information   | Flow Rate (pc/h/lin                                    |  | Site Inforn   | nation   |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4          | SEB<br>CHA<br>02/15/12<br>AM                           |  |   | ction of Travel  | Northbound<br>Exit 2 to Ex<br>NYSDOT<br>2036 Diam                     | kit 4  |
| Oper.(LOS)  |  |  | Des.(N)   |  | ☐ Plann   | ing Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D | 3650   | veh/h<br>veh/day<br>veh/h                | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade % | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi   |  |
| Driver type adjustment  | 1.00   |  |   | Up/Down %  |   |  |
| Calculate Flow Adjustr  | 1.00   |  | Е   |  | 1.2   |  |
| f <sub>p</sub><br>E <sub>⊤</sub>  | 1.50   |  | E <sub>R</sub>  | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990   |  |
| Speed Inputs  | 7.0  |  |   | d Adj and FFS  |   |  |
| Lane Width Rt-Shoulder Lat. Clearance   | 12.0<br>6.0  | ft<br>ft                                 | f <sub>LW</sub>   | a Auj ana i i c  | <u>,                                      </u>                        | mi/h   |
| Interchange Density<br>Number of Lanes, N   | 0.50<br>3  | I/mi                                     | f <sub>LC</sub><br>f <sub>ID</sub>  |  |   | mi/h<br>mi/h   |
| FFS (measured)<br>Base free-flow Speed, BFFS  | 56.0   | mi/h<br>mi/h                             | f <sub>N</sub><br>FFS   |  | 56.0  | mi/h<br>mi/h   |
| LOS and Performance   | Measures   | 1111/11                                  | Design (N)  | \  |   |  |
| Operational (LOS)  v <sub>p</sub> = (V or DDHV) / (PHF x N ) f <sub>p</sub> ) S                   | x f <sub>HV</sub> x<br>1336<br>56.0                    | pc/h/ln<br>mi/h                          | <u>Design (N)</u><br>Design LOS   | HV) / (PHF x N x   | f <sub>HV</sub> x   | pc/h<br>mi/h   |
| D = v <sub>p</sub> / S<br>LOS   | 23.9<br>C  | pc/mi/ln                                 | $D = v_p / S$   | mber of Lanes, N   |   | pc/mi/ln   |
| Glossary  |  |  | Factor Loc  | ation  |   |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service           | S - Speed D - Density FFS - Free-flow BFFS - Base free |  | f <sub>p</sub> - Page 23-   | 23-8, 23-10, 23-1°   | 1 f<br>f  | LW - Exhibit 23-4<br>LC - Exhibit 23-5<br>N - Exhibit 23-6<br>D - Exhibit 23-7     |
| DDHV - Directional design ho  |  |  |   | Version 5.3  |   | rated: 2/17/2012 1:19  |

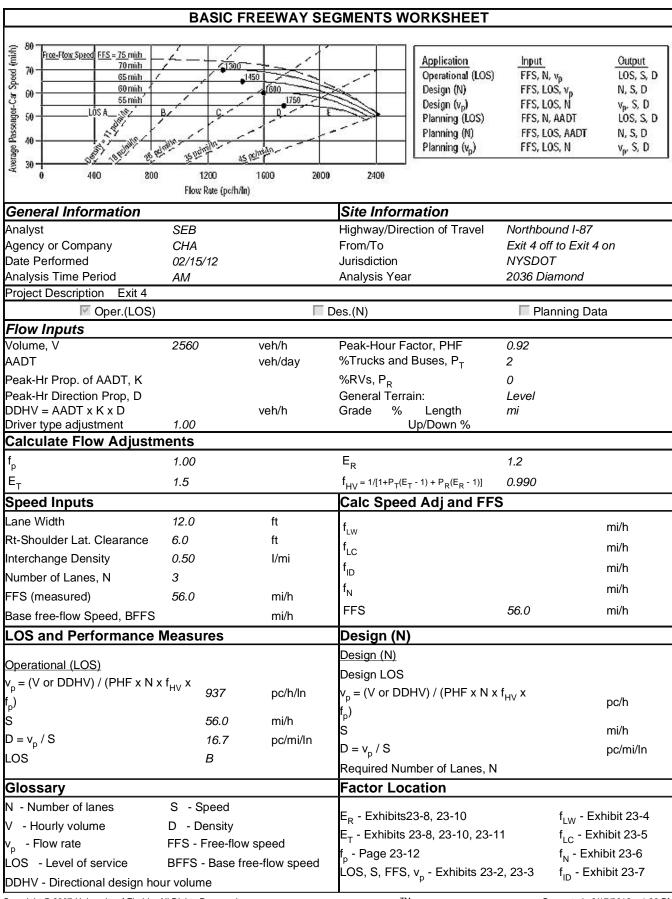
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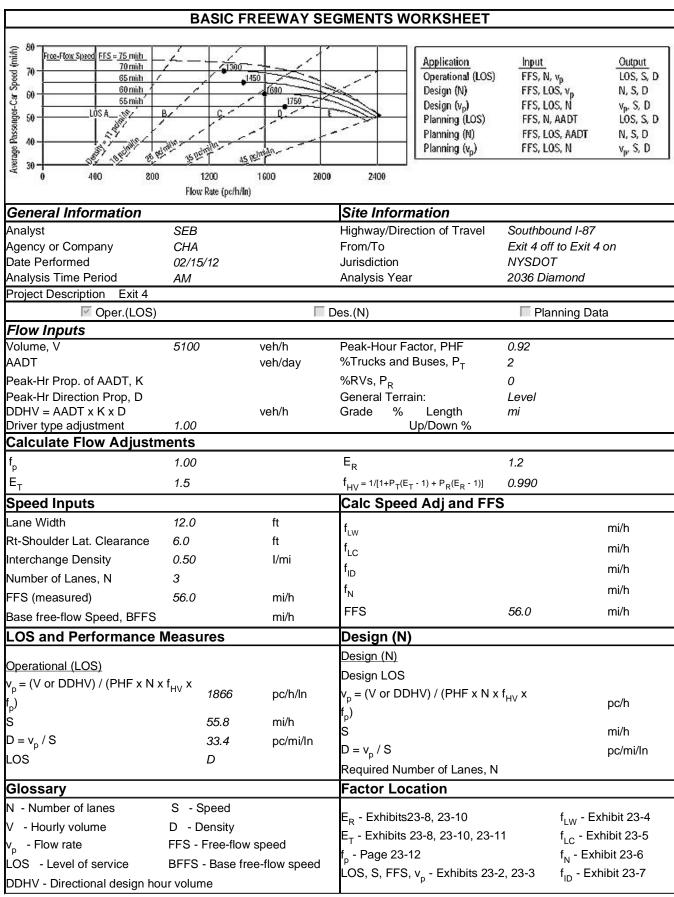
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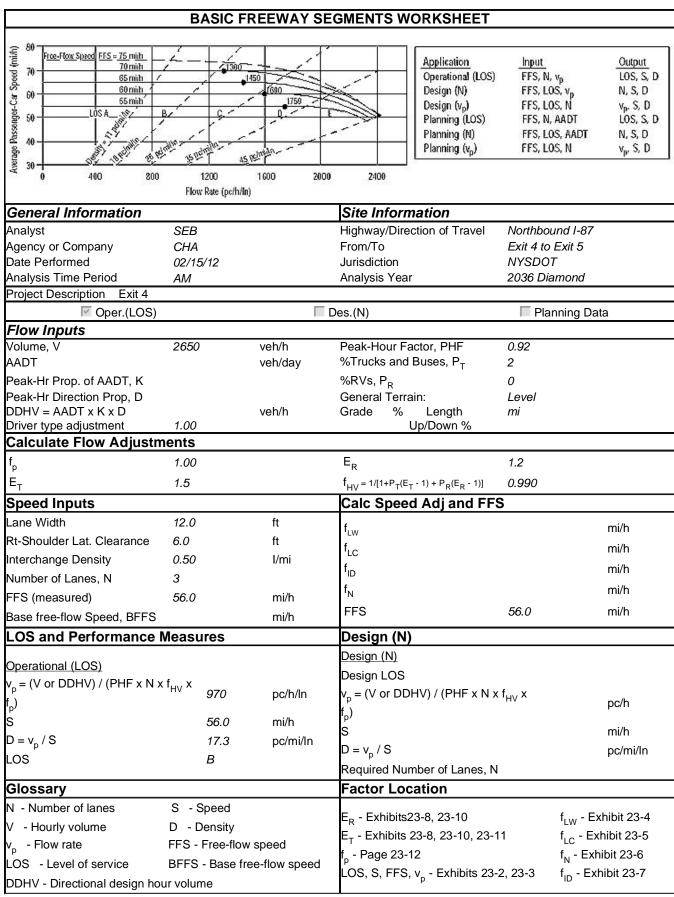
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|   | BASIC F  | REEWAY SE        | GMENTS W   | ORKSHEET   |  |   |
|---|--|------------------|--|--|--|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 60 mith 55 mith 55 mith 50 LOS A 10 LOS A 20 0 400 800 | B C C S  | 1500 2000        | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS | , v <sub>p</sub> N, S, D<br>, N v <sub>p</sub> , S, D<br>ADT LOS, S, D<br>, AADT N, S, D          |
| General Information   | Flow Rate (pc/h/lir                                  | )                | Site Inforn  | nation   |  |   |
| Analyst   | SEB  |                  |  | ction of Travel  | Southbou   | nd I-87   |
| Agency or Company<br>Date Performed   | CHA<br>02/15/12                                      |                  | From/To Jurisdiction   |  | Exit 5 to E<br>NYSDOT<br>2036 Dian                                 | xit 4   |
| Analysis Time Period Project Description Exit 4   | AM   |                  | Analysis Yea   | I  | 2030 Dian  | ТОПИ  |
| ✓ Oper.(LOS)  |  |                  | Des.(N)  |  | ☐ Planı  | ning Data   |
| Flow Inputs   |  |                  | . ,  |  |  |   |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K   | 5850   | veh/h<br>veh/day | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub>                                  | ,  | 0.92<br>2<br>0   |   |
| Peak-III Flop, of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment          | 1.00   | veh/h            | General Terra<br>Grade %   | ain:<br>Length<br>Up/Down %  | Level<br>mi  |   |
| Calculate Flow Adjustr  |  |                  |  | <u>оргионт 70</u>  |  |   |
| f <sub>p</sub>  | 1.00   |                  | E <sub>R</sub>   |  | 1.2  |   |
| E <sub>T</sub>  | 1.5  |                  | • •  | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990  |   |
| Speed Inputs  |  |                  |  | d Adj and FFS  |  |   |
| Lane Width  | 12.0   | ft               |  | <u> </u>   |  | :/b   |
| Rt-Shoulder Lat. Clearance  | 6.0  | ft               | f <sub>LW</sub>  |  |  | mi/h  |
| Interchange Density   | 0.50   | I/mi             | f <sub>LC</sub>  |  |  | mi/h  |
| Number of Lanes, N  | 3  |                  | $f_ID$   |  |  | mi/h  |
| FFS (measured)  | 56.0   | mi/h             | $f_N$  |  |  | mi/h  |
| Base free-flow Speed, BFFS  | 00.0   | mi/h             | FFS  |  | 56.0   | mi/h  |
| LOS and Performance   | Measures   |                  | Design (N)   | <u> </u>   |  |   |
| Operational (LOS) $V_p = (V \text{ or DDHV}) / (PHF x N)$   | x f x  |                  | <u>Design (N)</u><br>Design LOS  |  |  |   |
| f <sub>p</sub> )  | 2141   | pc/h/ln          | 1.5  | HV) / (PHF x N x   | t <sub>HV</sub> x  | pc/h  |
| S   | 53.0   | mi/h             | f <sub>p</sub> )   |  |  | :/l-  |
| $D = v_p / S$   | 40.4   | pc/mi/ln         | S<br>D = v / S   |  |  | mi/h  |
| LOS   | E  |                  | D = v <sub>p</sub> / S   | mber of Lanes, N   |  | pc/mi/ln  |
| Glossary  |  |                  | Factor Loc   |  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service                 | S - Speed D - Density FFS - Free-flov BFFS - Base fr |                  | E <sub>R</sub> - Exhibits2<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1<br>12   | 1  | f <sub>LW</sub> - Exhibit 23-4<br>f <sub>LC</sub> - Exhibit 23-5<br>f <sub>N</sub> - Exhibit 23-6 |
| DDHV - Directional design ho  | our volume   |                  | 105, 5, FFS  | , v <sub>p</sub> - Exhibits 23-2   | 2, 23-3  | f <sub>ID</sub> - Exhibit 23-7  |
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|   | BASIC F                      | REEWAY SE                | GMENTS W  | ORKSHEET   |   |  |
|---|------------------------------|--------------------------|---|--|---|--|
| _ 00  |                              |                          |   |  |   |  |
| Froe-Flow Speed   FFS = 75 mith   70 mith | B, C                         | 450<br>(600<br>1750<br>0 |   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v <sub>p</sub><br>FFS, LOS, v<br>FFS, LOS, N<br>FFS, N, AAU<br>FFS, LOS, N | V <sub>P</sub> , S, D<br>DT LOS, S, D<br>ADT N, S, D |
| 0 400 800   | 1200<br>Flow Rate (pc/h/lin  | 1600 200 <b>0</b><br>)   | 2400  |  |   |  |
| General Information   |                              | -,-                      | Site Inform   | nation   |   |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period  | CLD<br>CHA<br>07/30/13<br>AM |                          | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea                 | ection of Travel   | Northbound<br>Exit 5 to Exi<br>NYSDOT<br>2036 Diamo   | t 6  |
| Project Description Exit 4  |                              |                          | Dog (NI)  |  | □ Dlannir   | na Data  |
| ✓ Oper.(LOS)  Flow Inputs   |                              |                          | Des.(N)   |  | □ Plannir   | ng Data  |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K   | 2550                         | veh/h<br>veh/day         | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub>                     |  | 0.92<br>2<br>0  |  |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjustr   | 1.00                         | veh/h                    | General Terra<br>Grade %  | ain:<br>Length<br>Up/Down %  | Level<br>mi   |  |
| •   | 1.00                         |                          | E <sub>R</sub>  |  | 1.2   |  |
| f <sub>p</sub><br>E <sub>⊤</sub>  | 1.50                         |                          |   | 1) . D /E 1)]  | 0.990   |  |
| Speed Inputs  | 1.5                          |                          |   | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]<br><b>d Adj and FFS</b>   |   |  |
| Lane Width  | 12.0                         | ft                       |   | u Auj anu 113  | <b>)</b>  |  |
| Rt-Shoulder Lat. Clearance  | 6.0                          | ft                       | f <sub>LW</sub>   |  |   | mi/h   |
| Interchange Density   | 0.50                         | I/mi                     | f <sub>LC</sub>   |  |   | mi/h   |
| Number of Lanes, N  | 4                            |                          | $f_{ID}$  |  |   | mi/h   |
| FFS (measured)  | 56.0                         | mi/h                     | $f_N$   |  |   | mi/h   |
| Base free-flow Speed, BFFS  |                              | mi/h                     | FFS   |  | 56.0  | mi/h   |
| LOS and Performance   | Measures                     |                          | Design (N)  | )  |   |  |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N :<br>f_)   | x f <sub>HV</sub> x 700      | pc/h/ln                  | $\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DD})$ | )HV) / (PHF x N x  | f <sub>HV</sub> x   | pc/h   |
| S   | 56.0                         | mi/h                     | f <sub>p</sub> )  |  |   | ·  |
| $D = v_p / S$   | 12.5                         | pc/mi/ln                 | S / C   |  |   | mi/h   |
| LOS   | В                            |                          | D = v <sub>p</sub> / S  | mbor of Lanca N  |   | pc/mi/ln   |
| Glossary  |                              |                          | Factor Loc  | mber of Lanes, N   |   |  |
| N - Number of lanes   | S - Speed                    |                          | 1   |  |   |  |
| V - Hourly volume   | D - Density                  |                          | E <sub>R</sub> - Exhibits2  |  | _   | <sub>W</sub> - Exhibit 23-4                          |
| v <sub>o</sub> - Flow rate  | FFS - Free-flow              | / speed                  | ·   | 23-8, 23-10, 23-1  | _   | <sub>C</sub> - Exhibit 23-5                          |
| LOS - Level of service  | BFFS - Base fr               |                          | f <sub>p</sub> - Page 23-   |  |   | - Exhibit 23-6                                       |
| DDHV - Directional design ho  |                              | -1,                      | LOS, S, FFS,  | , v <sub>p</sub> - Exhibits 23-2   | 2, 23-3 f <sub>IC</sub>   | o - Exhibit 23-7                                     |
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|   | DASIC F                          | REEWAY SE                   | EGMENTS V   | VORKSHEET  |   |  |
|---|----------------------------------|-----------------------------|---|--|---|--|
| No.   No. | By C.                            | 450<br>(600<br>1750<br>0    |   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, Vp FFS, LOS, Vp FFS, LOS, N FFS, N, AADT FFS, LOS, AADT FFS, LOS, N | Output  LOS, S, D  N, S, D  v <sub>p</sub> , S, D  LOS, S, D  N, S, D  v <sub>p</sub> , S, D |
| 0 400 800   | ) 1200<br>Flow Rate (pc/h/lin    | 1600 200<br>)               | 0 2400  |  |   |  |
| General Information   |                                  |                             | Site Infor  | mation   |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4  | CLD<br>CHA<br>07/30/13<br>AM     |                             | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea   | ection of Travel   | Southbound I-8<br>Exit 6 to Exit 5<br>NYSDOT<br>2036 Diamond                      | 37   |
| ✓ Oper.(LOS)  |                                  | Г                           | Des.(N)   |  | ☐ Planning I  | Data   |
| Flow Inputs<br>Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K  | 6300                             | veh/h<br>veh/day            | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub>  | d Buses, P <sub>T</sub>  | 0.92<br>2<br>0  |  |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjusti   | 1.00<br>ments                    | veh/h                       | General Teri<br>Grade %   |  | Level<br>mi   |  |
| f <sub>p</sub>  | 1.00                             |                             | E <sub>R</sub>  |  | 1.2   |  |
| E <sub>T</sub>  | 1.5                              |                             | -   | E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990   |  |
| Speed Inputs  |                                  |                             | Calc Spee   | ed Adj and FFS   | 3   |  |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)   | 12.0<br>6.0<br>0.50<br>4<br>56.0 | ft<br>ft<br>I/mi<br>mi/h    | $f_{LW}$ $f_{LC}$ $f_{ID}$ $f_{N}$ FFS  |  | 56.0  | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h   |
| Base free-flow Speed, BFFS  |                                  | mi/h                        |   |  | 36.0  | 1111/11  |
| LOS and Performance  Operational (LOS) $V_p = (V \text{ or DDHV}) / (PHF \times N f_p)$ S $D = V_p / S$ LOS   |                                  | pc/h/ln<br>mi/h<br>pc/mi/ln | $f_p^r$ )<br>S<br>D = $v_p$ / S   | DHV) / (PHF x N x  | f <sub>HV</sub> x   | pc/h<br>mi/h<br>pc/mi/ln   |
| Glossary  |                                  |                             | Factor Lo   | umber of Lanes, N  |   |  |
| Glossary  N - Number of lanes  V - Hourly volume  v <sub>p</sub> - Flow rate  LOS - Level of service  DDHV - Directional design ho  |                                  |                             | E <sub>R</sub> - Exhibits<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23<br>LOS, S, FFS | s23-8, 23-10<br>s 23-8, 23-10, 23-1  | 1 f <sub>LC</sub> - f <sub>N</sub> - E<br>2, 23-3 f <sub>ID</sub> - I             | Exhibit 23-4 Exhibit 23-5 Exhibit 23-6 Exhibit 23-7  8/12/2013 3:28 F                        |

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|  |                    | MPS AND                       | KAMP JUN          |  |                                  |   |                  |                     |                                |  |
|--|--------------------|-------------------------------|-------------------|--|----------------------------------|---|------------------|---------------------|--------------------------------|--|
| General Infor  | mation             |                               |                   | Site Infor   | mation                           |   |                  |                     |                                |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioc | 02/1               |                               | Jı<br>Jı          | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year |                                  | Northbound I-8<br>Exit 2W On-Ra<br>NYSDOT<br>2036 Diamond |                  |                     |                                |  |
| Project Description  |                    |                               |                   |  |                                  |   |                  |                     |                                |  |
| nputs  |                    |                               |                   |  |                                  |   |                  |                     |                                |  |
| Jpstream Adj Ramp  |                    | Terrain: Level                |                   |  |                                  |   |                  | Downstre<br>Ramp    | eam Adj                        |  |
| Yes Cor  |                    |                               |                   |  |                                  |   |                  | ☐ Yes               | □ On                           |  |
| □ No     Of  | f                  |                               |                   |  |                                  |   |                  | ✓ No                | ☐ Off                          |  |
| up = 1100  | ft                 |                               |                   |  |                                  |   |                  | L <sub>down</sub> = | ft                             |  |
| $V_{\rm u} = 680 \text{ v}$  |                    |                               |                   | show lanes, L <sub>A</sub> ,                               | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$ | 10.0 mph  | V <sub>D</sub> = | veh/h               |                                |  |
| Conversion t   | o pc/h Und         | der Base C                    | onditions         |  |                                  |   |                  |                     |                                |  |
| (pc/h)   | V<br>(Veh/hr)      | PHF                           | Terrain           | %Truck   | %Rv                              | ${\sf f}_{\sf HV}$  | f <sub>p</sub>   | v = V/PH            | $F \times f_{HV} \times f_{p}$ |  |
| Freeway  | 3250               | 0.92                          | Level             | 2  | 0                                | 0.990   | 1.00             |                     | 3568                           |  |
| Ramp   | 400                | 0.92                          | Level             | 2  | 0                                | 0.990   | 1.00             |                     | 439                            |  |
| UpStream   | 680                | 0.92                          | Level             | 2  | 0                                | 0.990   | 1.00             |                     | 747                            |  |
| DownStream   |                    | Merge Areas                   |                   | <u> </u>   |                                  | J   | Diverge Are      | 25                  |                                |  |
| Estimation of V <sub>12</sub>  |                    |                               |                   |  |                                  | ion of v <sub>12</sub>                                    | Diverge Are      | <u>as</u>           |                                |  |
|  |                    | (D )                          |                   |  |                                  |   |                  |                     |                                |  |
| $V_{12} = V_F (P_{FM})$ $L_{FO} = 924.70 $ (Equation 25-2 or 25-3)     |                    |                               |                   |  |                                  | V <sub>12</sub>   | $= V_R + (V_F -$ | $V_R)P_{FD}$        |                                |  |
| EQ =   |                    |                               |                   |  | L <sub>EQ</sub> =                |   |                  | 25-8 or 25-         |                                |  |
| FM =   |                    |                               | on (Exhibit 25-5) | )  | P <sub>FD</sub> =                |   |                  | ation (Exhibi       | t 25-12)                       |  |
| 12 =   | 2145               |                               | n 05 4 nr 05      |  | V <sub>12</sub> =                |   | pc/h             |                     |                                |  |
| or V <sub>av34</sub>   | 5)                 | pc/h (Equatio                 | 11 23-4 01 23-    |  | $V_3$ or $V_{av34}$              |   |                  | ion 25-15 or 2      | 5-16)                          |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,70                           | 0 pc/h?            | s 🗹 No                        |                   |  |                                  | $_{34} > 2,700 \text{ pc/h}^2$                            |                  |                     |                                |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5                            | V <sub>12</sub> /2 | s 🗹 No                        |                   |  | 0 0                              | $_{34} > 1.5 * V_{12}/2$                                  |                  |                     |                                |  |
| Yes,V <sub>12a</sub> =   | pc/h               | (Equation 25-                 | 8)                |  | If Yes,V <sub>12a</sub> =        | :   | pc/h (Equa       | ation 25-18)        | )                              |  |
| Capacity Che   | cks                |                               |                   |  | Capacit                          | y Checks  |                  |                     |                                |  |
|  | Actual             | Ca                            | pacity            | LOS F?   |                                  | Actu  | al               | Capacity            | LOS F                          |  |
|  |                    |                               |                   | 1  | V <sub>F</sub>                   |   | Exhibit          | 25-14               |                                |  |
| $V_{FO}$   | 4007               | Exhibit 25-7                  |                   | No   | $V_{FO} = V_{F}$                 | - V <sub>R</sub>  | Exhibit          | 25-14               |                                |  |
|  |                    |                               |                   |  | V <sub>R</sub>                   |   | Exhibit          | 25-3                |                                |  |
| low Entering   | n Merae In         | fluence A                     |                   |  |                                  | tering Div  |                  |                     | <br>ea                         |  |
|  | Actual             |                               | esirable          | Violation?   |                                  | Actual  |                  | esirable            | Violation?                     |  |
| V <sub>R12</sub>   | 2584               | Exhibit 25-7                  | 4600:All          | No   | V <sub>12</sub>                  |   | Exhibit 25-1     | _                   |                                |  |
| Level of Serv  | ice Deterr         | nination (i                   | not F)            | •  |                                  | Service L   |                  |                     | ot F)                          |  |
|  |                    | 0.0078 V <sub>12</sub> - 0.00 |                   |  | 1                                | D <sub>R</sub> = 4.252 +                                  |                  |                     |                                |  |
| ) <sub>R</sub> = 20.1 (pc  |                    | 12                            | ,,                |  |                                  | c/mi/ln)  |                  |                     |                                |  |
| OS = C (Exhib  | oit 25-4)          |                               |                   |  | LOS = (E                         | xhibit 25-4)  |                  |                     |                                |  |
| Speed Deterr   | nination           |                               |                   |  |                                  | Determina   | tion             |                     |                                |  |
| $M_{\rm S} = 0.305  (Exi)$   |                    |                               |                   |  |                                  | xhibit 25-19)   |                  |                     |                                |  |
| <del>-</del>   | (Exhibit 25-19)    |                               |                   |  |                                  | ph (Exhibit 25-1  | 9)               |                     |                                |  |
|  |                    |                               |                   |  | 1                                | ph (Exhibit 25-1  |                  |                     |                                |  |
| U i i i i i i i i i i i i i i i i i i i                                |                    |                               |                   |  | ľ                                | ph (Exhibit 25-1  | •                |                     |                                |  |
| S = 52.1 mph (Exhibit 25-14)   |                    |                               |                   |  |                                  |   |                  |                     |                                |  |

|   |                                | IXAIIII                           | S AND RAM                |  |                                       |                     |                        |  |                               |                                    |
|---|--------------------------------|-----------------------------------|--------------------------|--|---------------------------------------|---------------------|------------------------|--|-------------------------------|------------------------------------|
| General Ir  | nformation                     |                                   |                          | Site Infor   | mation                                |                     |                        |  |                               |                                    |
| Analyst<br>Agency or Com<br>Date Performed<br>Analysis Time F | 02                             | HA<br>/15/12                      | Ji<br>Ji                 | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | avel                                  |                     |                        |  |                               |                                    |
| Project Descrip   | tion Exit 4                    |                                   |                          |  |                                       |                     |                        |  |                               |                                    |
| Inputs  |                                |                                   |                          |  |                                       |                     |                        |  |                               |                                    |
| Upstream Adj R  | •                              | Terrain: Leve                     | ·l                       |  |                                       |                     |                        |  | Downstrea<br>Ramp             | m Adj                              |
|   | On                             |                                   |                          |  |                                       |                     |                        |  | ✓ Yes                         | ✓ On                               |
| ✓ No  | Off                            |                                   |                          |  |                                       |                     |                        |  | □ No                          | ☐ Off                              |
| L <sub>up</sub> = f   | t                              |                                   | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4                   | 10 0 mi             | n <b>h</b>             |  | L <sub>down</sub> =           | 1850 ft                            |
| u   | eh/h                           |                                   | Sketch (                 | show lanes, L <sub>A</sub>                                 |                                       | 10.0 III            | γπ                     |  | V <sub>D</sub> =              | 590 <b>veh</b> /                   |
| Conversion  | on to pc/h U                   | nder Base                         | Conditions               |  |                                       |                     |                        |  |                               |                                    |
| (pc/h)  | V<br>(Veh/hr)                  | PHF                               | Terrain                  | %Truck   | %Rv                                   |                     | $f_{HV}$               | f <sub>p</sub>                         | v = V/PHF                     | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 3650                           | 0.92                              | Level                    | 2  | 0                                     | 0                   | .990                   | 1.00                                   | 400                           | )7                                 |
| Ramp  | 1060                           | 0.82                              | Level                    | 2  | 0                                     | 0                   | .990                   | 1.00                                   | 130                           | )6                                 |
| UpStream  |                                |                                   |                          | <del>                                     </del>           |                                       | +                   |                        |  |                               |                                    |
| DownStream  | 590                            | 0.92                              | Level                    | 2  | 0                                     | 0                   | .990                   | 1.00                                   | 64                            | 8                                  |
| Estimatio   | n of v                         | Merge Areas                       |                          |  | Estimati                              | ion                 |                        | Diverge Areas                          |                               |                                    |
| LSumano   |                                |                                   |                          |  | LSuman                                | 1011                |                        |  |                               |                                    |
|   | $V_{12} = V_{12}$              | V <sub>F</sub> (P <sub>FM</sub> ) |                          |  |                                       |                     | V <sub>12</sub> =      | = V <sub>R</sub> + (V <sub>F</sub> - V | <sub>R</sub> )P <sub>FD</sub> |                                    |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                     |                                |                                   |                          |  | L <sub>EQ</sub> =                     |                     | (                      | Equation 25-8                          | 3 or 25-9)                    |                                    |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)               |                                |                                   |                          |  |                                       |                     | 0                      | .600 using Ed                          | quation (Exhi                 | bit 25-12)                         |
| V <sub>12</sub> =   | pc/                            | h                                 |                          |  | V <sub>12</sub> =                     |                     | 2                      | 926 pc/h                               |                               |                                    |
| $V_3$ or $V_{av34}$   | pc/                            | h (Equation 25                    | 5-4 or 25-5)             |  | V <sub>3</sub> or V <sub>av34</sub>   |                     | 1                      | 081 pc/h (Equ                          | ation 25-15                   | or 25-16                           |
| Is V <sub>3</sub> or V <sub>av34</sub> >                      | - 2,700 pc/h? ☐ Ŋ              | ∕es                               |                          |  | Is V <sub>3</sub> or V <sub>av3</sub> | 34 > 2,             | 700 pc/h?              | Tyes  ✓ No                             |                               |                                    |
| Is V <sub>3</sub> or V <sub>av34</sub> >                      | · 1.5 * V <sub>12</sub> /2 🔲 \ | ∕es                               |                          |  | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>34</sub> > 1.! | 5 * V <sub>12</sub> /2 | Tyes ✓ No                              |                               |                                    |
| If Yes,V <sub>12a</sub> =                                     | pc/                            | h (Equation 25                    | 5-8)                     |  | If Yes,V <sub>12a</sub> =             | =                   |                        | oc/h (Equation                         | 25-18)                        |                                    |
| Capacity (  | Checks                         |                                   | -                        |  | Capacit                               |                     |                        |  |                               |                                    |
| ,   | Actual                         | С                                 | apacity                  | LOS F?   | <del>† ' '</del>                      |                     | Actual                 | Ca                                     | pacity                        | LOS F                              |
|   |                                |                                   |                          | 1  | V <sub>F</sub>                        |                     | 4007                   | Exhibit 25-1                           | 1                             | No                                 |
| V <sub>FO</sub>   |                                | Exhibit 25-7                      |                          |  | $V_{FO} = V_{F}$                      | - Vp                | 2701                   | Exhibit 25-1                           | 4 6780                        | No                                 |
| - FO  |                                | Eximple 20 7                      |                          |  | V <sub>R</sub>                        | ·R                  |                        | Exhibit 25-3                           |                               | _                                  |
|   |                                | 161                               |                          |  | <u> </u>                              |                     | 1306                   |  |                               | No                                 |
| riow Ente   | ring Merge                     | 1                                 |                          | Violation?   | riow En                               | iterii              |                        | rge Influen  Max Desiral               |                               | Violation                          |
| \/  | Actual                         | Exhibit 25-7                      | Desirable                | Violation?   | \/                                    | +                   | Actual                 | Exhibit 25-14                          | 4400:All                      |                                    |
| V <sub>R12</sub>  | ervice Dete                    |                                   | if not F\                | 1  | V <sub>12</sub>                       |                     | 2926                   | eterminatio                            |                               | No                                 |
|   |                                | •                                 |                          |  |                                       |                     |                        |  |                               | -)                                 |
|   | + 0.00734 v <sub>R</sub>       | + 0.0078 V <sub>12</sub> -        | 0.00027 L <sub>A</sub>   |  |                                       | • • •               |                        | 0.0086 V <sub>12</sub> - 0.            | oos L <sub>D</sub>            |                                    |
|   | c/mi/ln)                       |                                   |                          |  | I ''                                  |                     | /mi/ln)                |  |                               |                                    |
| `   | xhibit 25-4)                   |                                   |                          |  |                                       | •                   | bit 25-4)              |  |                               |                                    |
| Speed De  | termination                    |                                   |                          |  | Speed L                               | Dete                | rminati                | on                                     |                               |                                    |
| M <sub>S</sub> = (Exil  | bit 25-19)                     |                                   |                          |  | $D_s = 0.4$                           | 481 <b>(E</b>       | xhibit 25              | -19)                                   |                               |                                    |
| S <sub>R</sub> = mph (Exhibit 25-19)                          |                                |                                   |                          |  | S <sub>R</sub> = 49                   | 9.3 mpl             | h (Exhibit             | 25-19)                                 |                               |                                    |
|   | (Exhibit 25-19)                |                                   |                          |  |                                       | 1.1 mp              | h (Exhibit             | 25-19)                                 |                               |                                    |
| 1   |                                |                                   |                          |  | 1.                                    | -                   | `<br>h (Exhibit        |  |                               |                                    |
| S = mph (Exhibit 25-14)                                       |                                |                                   |                          | . 52   | ~ mp                                  | . ,                 | ,                      |  |                               |                                    |

|  |                                 | MPS AND   | NAME JON            |   |                           |  |                                      |                        |                                      |
|--|---------------------------------|---|---------------------|---|---------------------------|--|--------------------------------------|------------------------|--------------------------------------|
| General Infor  | mation                          |   |                     | Site Infor  | mation                    |  |                                      |                        |                                      |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | 02/1                            |   | Ju<br>Ju            | reeway/Dir of Tra<br>unction<br>urisdiction<br>nalysis Year |                           | Northbound I-8<br>Exit 4 NB On-R<br>NYSDOT<br>2036 Diamond |                                      |                        |                                      |
| Project Description  |                                 |   | 2 31                | narysis i cai   |                           | 2000 Diamona   |                                      |                        |                                      |
| nputs  |                                 |   |                     |   |                           |  |                                      |                        |                                      |
| Jpstream Adj Ramp  |                                 | Terrain: Level  |                     |   |                           |  |                                      | Downstre               | eam Adi                              |
| ✓ Yes ☐ Or   | 1                               |   |                     |   |                           |  |                                      | Ramp<br>□ Yes          | ,<br>☐ On                            |
| ■ No     Of  | f                               |   |                     |   |                           |  | ✓ No                                 | □ Off                  |                                      |
| <sub>rup</sub> = 1850  | ft                              |   |                     |   |                           |  |                                      | L <sub>down</sub> =    | ft                                   |
| / <sub>u</sub> = 1060 v  |                                 | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$<br>Sketch ( show lanes, $L_{A'} L_{D'} V_{R'} V_{P'}$ ) |                     |   |                           |  |                                      | V <sub>D</sub> =       | veh/h                                |
| Conversion t   | o pc/h Un                       | c/h Under Base Conditions   |                     |   |                           |  |                                      |                        |                                      |
| (pc/h)   | V<br>(Veh/hr)                   | PHF   | Terrain             | %Truck  | %Rv                       | f <sub>HV</sub>  | fp                                   | v = V/PH               | F x f <sub>HV</sub> x f <sub>p</sub> |
| reeway   | 2560                            | 0.92  | Level               | 2   | 0                         | 0.990  | 1.00                                 |                        | 2810                                 |
| Ramp   | 590                             | 0.92  | Level               | 2   | 0                         | 0.990  | 1.00                                 |                        | 648                                  |
| UpStream   | 1060                            | 0.96  | Level               | 2   | 0                         | 0.990  | 1.00                                 |                        | 1115                                 |
| DownStream   |                                 | Morgo Aroas   |                     |   |                           |  | Diverge Are                          | 200                    |                                      |
| Merge Areas <b>Estimation of v</b> <sub>12</sub>                       |                                 |   |                     |   |                           | ion of v <sub>12</sub>                                     | Diverge Are                          | as                     |                                      |
|  |                                 | /D )  |                     |   | Lotimat                   | <u></u>  |                                      |                        |                                      |
| $V_{12} = V_F (P_{FM})$  |                                 |   |                     |   |                           | V <sub>12</sub>  | = V <sub>R</sub> + (V <sub>F</sub> - | $V_R)P_{FD}$           |                                      |
| EQ =   |                                 | (Equation 2   |                     |   | L <sub>EQ</sub> =         |  | (Equation                            | 25-8 or 25-            | 9)                                   |
| r <sub>FM</sub> =  |                                 |   | on (Exhibit 25-5)   | )   | P <sub>FD</sub> =         |  | using Equ                            | ation (Exhibi          | t 25-12)                             |
| 12 =   | 1726                            |   | - 05 4 05           |   | V <sub>12</sub> =         |  | pc/h                                 |                        |                                      |
| or V <sub>av34</sub>   | 5)                              | pc/h (Equatio   | 11 25-4 01 25-      |   | $V_3$ or $V_{av34}$       |  |                                      | ion 25-15 or 2         | 5-16)                                |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,70                           | ,                               | s 🗹 No  |                     |   |                           | <sub>34</sub> > 2,700 pc/h <sup>2</sup>                    |                                      |                        |                                      |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5                            | <sup>*</sup> V <sub>12</sub> /2 | s 🗹 No  |                     |   |                           | $_{34} > 1.5 * V_{12}/2$                                   |                                      |                        |                                      |
| Yes,V <sub>12a</sub> =   | pc/h                            | (Equation 25-   | ·8)                 |   | If Yes,V <sub>12a</sub> = | :  | pc/h (Equ                            | ation 25-18)           | )                                    |
| Capacity Che   | cks                             |   |                     |   | Capacit                   | y Checks   |                                      |                        |                                      |
| •  | Actual                          | Ca  | pacity              | LOS F?  |                           | Actu   | al                                   | Capacity               | LOS F?                               |
|  |                                 |   |                     |   | V <sub>F</sub>            |  | Exhibit                              | 25-14                  |                                      |
| $V_{FO}$   | 3458                            | Exhibit 25-7  |                     | No  | $V_{FO} = V_{F}$          | - V <sub>R</sub>   | Exhibit                              | 25-14                  |                                      |
|  |                                 |   |                     |   | V <sub>R</sub>            |  | Exhibit                              | 25-3                   |                                      |
| low Entering   | a Merae In                      | fluence A   | rea                 |   |                           | tering Div   | rerae Influ                          | ience Are              | <u>''''</u><br>ea                    |
|  | Actual                          |   | esirable            | Violation?  |                           | Actual   |                                      | esirable               | Violation?                           |
| V <sub>R12</sub>   | 2374                            | Exhibit 25-7  | 4600:All            | No  | V <sub>12</sub>           |  | Exhibit 25-1                         | 4                      |                                      |
| Level of Serv  | ice Deterr                      | nination (i   | not F)              |   |                           | Service L  | Determina                            | tion (if n             | ot F)                                |
| D <sub>R</sub> = 5.475 +   | 0.00734 v <sub>R</sub> + 0      | 0.0078 V <sub>12</sub> - 0.00   | )627 L <sub>A</sub> |   |                           | D <sub>R</sub> = 4.252 +                                   | · 0.0086 V <sub>12</sub>             | - 0.009 L <sub>D</sub> |                                      |
| ) <sub>R</sub> = 15.5 (pc  | :/mi/ln)                        | -   |                     |   | D <sub>R</sub> = (p       | oc/mi/ln)  |                                      | _                      |                                      |
| OS = B (Exhil  | oit 25-4)                       |   |                     |   |                           | Exhibit 25-4)  |                                      |                        |                                      |
| Speed Deterr   | -                               |   |                     |   |                           | Determina  | tion                                 |                        |                                      |
|  |                                 |   |                     |   |                           | xhibit 25-19)  |                                      |                        |                                      |
| $M_S = 0.258$ (Exibit 25-19)<br>$S_R = 52.4$ mph (Exhibit 25-19)       |                                 |   |                     |   |                           | ph (Exhibit 25-1   | 9)                                   |                        |                                      |
|  |                                 |   |                     |   | 1                         | ph (Exhibit 25-1   |                                      |                        |                                      |
| S <sub>0</sub> = 53.9 mph (Exhibit 25-19)                              |                                 |   |                     |   | ľ                         | ph (Exhibit 25-1   | -                                    |                        |                                      |
| S = 52.9 mph (Exhibit 25-14)   |                                 |   |                     |   |                           |  |                                      |                        |                                      |

|  |                                  | RAMPS                  | S AND RAN              | IP JUNCTI  | ONS WO  | RKS              | HEET              |   |                     |             |  |
|--|----------------------------------|------------------------|------------------------|--|---|------------------|-------------------|---|---------------------|-------------|--|
| General Infor  | mation                           |                        |                        | Site Infor   |   |                  |                   |   |                     |             |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | SEB<br>CHA<br>02/1!<br>I AM      |                        | J                      | reeway/Dir of Tr<br>lunction<br>lurisdiction<br>Analysis Year            | avel [  | Exit 5 N         |                   |   |                     |             |  |
| Project Description  | Exit 4                           |                        |                        |  |   |                  |                   |   |                     |             |  |
| Inputs   |                                  | Terrain: Leve          | 1                      |  |   |                  |                   |   |                     |             |  |
| Upstream Adj Ramp  |                                  | Terrain: Leve          |                        |  |   |                  |                   |   | Downstrea<br>Ramp   | m Adj       |  |
| ☑ Yes ☑ Or   | 1                                |                        |                        |  |   |                  |                   |   | ☐ Yes               | □ On        |  |
| □ No □ Of  | f                                |                        |                        |  |   |                  |                   |   |                     |             |  |
|  | •                                |                        |                        |  |   |                  |                   |   | ™ No                | ☐ Off       |  |
| L <sub>up</sub> = 7810   | ft                               |                        | E4.0 mnh               |  | <b>C</b> 1                                      | Γ Λ mm           | h                 |   | L <sub>down</sub> = | ft          |  |
| $V_{u} = 590 \text{ v}$  | eh/h                             | 3                      | FF = 56.0 mph          | ( show lanes, L <sub>a</sub> ,   | $S_{FR} = 3$                                    | o.u mp           | ın                |   | V <sub>D</sub> =    | veh/h       |  |
| Conversion t   |                                  | dor Raso (             |                        | ( SHOW lattes, L <sub>A</sub>  | D' R' Vf  |                  |                   |   |                     |             |  |
|  | <i>V</i>                         |                        |                        | 0/ TI-   | 0/ D  | Т                | ſ                 | ,   | v V/DUE             | v f v f     |  |
| (pc/h)   | (Veh/hr)                         | PHF                    | Terrain                | %Truck   | %Rv   | +                | f <sub>HV</sub>   | -   | v = V/PHF           | · · · · ·   |  |
| Freeway  | 2650                             | 0.92                   | Level                  | 2  | 0   | <del>-</del>     | 990               | 1.00  | 29                  |             |  |
| Ramp   | 500                              | 0.96                   | Level                  | 2  | 0   | +                | 990               | 1.00  | 52                  | -           |  |
| UpStream<br>DownStream   | 590                              | 0.92                   | Level                  | 2  | 0   | 0.               | 990               | 1.00  | 64                  | ł           |  |
|  |                                  | Merge Areas            |                        | '  |   |                  |                   | Diverge Areas                                       |                     |             |  |
| Estimation of  |                                  | Estimati               | ion c                  | of v <sub>12</sub>   |   |                  |                   |   |                     |             |  |
|  | V <sub>12</sub> = V <sub>F</sub> | (P <sub>FM</sub> )     |                        |  | 1   |                  | V <sub>12</sub> = | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | R)P <sub>FD</sub>   |             |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                              |                                  |                        |                        |  | L <sub>FO</sub> =                               |                  | 6                 | 616.90 (Equati                                      | on 25-8 or          | 25-9)       |  |
| P <sub>FM</sub> =  | using                            | Equation (E            | xhibit 25-5)           |  | P <sub>FD</sub> =                               |                  |                   | .663 using Eq                                       |                     |             |  |
| V <sub>12</sub> =  | pc/h                             |                        |                        |  | V <sub>12</sub> =                               |                  | 2                 | 106 pc/h  |                     |             |  |
| V <sub>3</sub> or V <sub>av34</sub>                                    | pc/h                             | (Equation 25           | -4 or 25-5)            |  | $V_3$ or $V_{av34}$                             |                  | 8                 | 03 pc/h (Equa                                       | tion 25-15          | or 25-16)   |  |
| Is $V_3$ or $V_{av34} > 2,70$  | 00 pc/h?                         | s 🗆 No                 |                        |  | Is V <sub>3</sub> or V <sub>av3</sub>           | $_{34} > 2.7$    | 00 pc/h?          | ☐ Yes 🗹 No  |                     |             |  |
| Is $V_3$ or $V_{av34} > 1.5$   | · <del>-</del>                   |                        |                        |  |   |                  |                   | ☐ Yes 🗹 No  |                     |             |  |
| If Yes,V <sub>12a</sub> =  |                                  | (Equation 25           | -8)                    |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |                  |                   |   |                     |             |  |
| Capacity Che   | cks                              |                        |                        |  | Capacity  | y Ch             | ecks              |   |                     |             |  |
|  | Actual                           | Ci                     | apacity                | LOS F?   | ,,  |                  | Actual            | i   | pacity              | LOS F       |  |
| .,   |                                  |                        |                        |  | V <sub>F</sub>                                  |                  | 2909              | Exhibit 25-1  | _                   | No          |  |
| V <sub>FO</sub>  |                                  | Exhibit 25-7           |                        |  | $V_{FO} = V_{F}$                                | - V <sub>R</sub> | 2383              | Exhibit 25-1  |                     | No          |  |
|  |                                  |                        |                        |  | V <sub>R</sub>                                  |                  | 526               | Exhibit 25-3  |                     | No          |  |
| Flow Entering  |                                  | 1                      |                        | Afficial C   | Flow En   | _                |                   | rge Influen   |                     | VE-1-11 - 2 |  |
| W  | Actual                           | Exhibit 25-7           | Desirable              | Violation?   | \/  |                  | Actual            | Max Desirat   |                     | Violation   |  |
| V <sub>R12</sub><br>Level of Serv                                      | ica Dotorr                       |                        | f not E)               |  | V <sub>12</sub>                                 |                  | 2106              | Exhibit 25-14 eterminatio                           | 4400:All            | No<br>E)    |  |
| $D_R = 5.475 + 0.00$   |                                  |                        |                        |  |   |                  |                   | ).0086 V <sub>12</sub> - 0.                         | •                   |             |  |
| D <sub>R</sub> = 0.475 1 0.<br>D <sub>R</sub> = (pc/mi/                | •••                              | 0.0070 V <sub>12</sub> | 0.00027 L <sub>A</sub> |  |   | 1.               | /mi/ln)           | 7.0000 v <sub>12</sub> 0.                           | 003 LD              |             |  |
| LOS = (Exhib   | ,                                |                        |                        |  | 1   |                  | oit 25-4)         |   |                     |             |  |
| Speed Deterr   |                                  |                        |                        |  | Speed D   | •                |                   | on  |                     |             |  |
| _  |                                  |                        |                        |  | <del> </del>                                    |                  | xhibit 25         |   |                     |             |  |
|  |                                  |                        |                        |  | 1 ~   | ,                |                   | ,   |                     |             |  |
| S <sub>R</sub> = mph (Exhibit 25-19)                                   |                                  |                        |                        | $S_R^{=}$ 49.3 mph (Exhibit 25-19)<br>$S_0^{=}$ 61.4 mph (Exhibit 25-19) |   |                  |                   |   |                     |             |  |
| S = mnh /Evh   | , , ,                            |                        |                        |  |   |                  |                   |   |                     |             |  |
|  | ,                                |                        |                        |  |   |                  | (Exhibit          |   |                     |             |  |

| mation                               |  |  | Site Infor                 | mation                                |                  |             |                             |                     |                                    |
|--------------------------------------|--|--|----------------------------|---------------------------------------|------------------|-------------|-----------------------------|---------------------|------------------------------------|
| 02/15                                |  | J  | unction<br>urisdiction     | !<br>!                                | Exit 2V<br>NYSD  | V Off<br>OT |                             |                     |                                    |
| Exit 4                               |  |  |                            |                                       |                  |             |                             |                     |                                    |
|                                      |  |  |                            |                                       |                  |             |                             |                     |                                    |
|                                      | Terrain: Leve                                  |  |                            |                                       |                  |             |                             | Downstrea<br>Ramp   | m Adj                              |
|                                      |  |  |                            |                                       |                  |             |                             | ✓ Yes               | ✓ On                               |
| f                                    |  |  |                            |                                       |                  |             |                             | □ No                | ☐ Off                              |
|                                      | 9  | - 56 0 mnh   |                            | 9 - 1                                 | 0 0 m            | nh.         |                             | L <sub>down</sub> = | 1300 ft                            |
| ı                                    |  | • •  | show lanes, L <sub>A</sub> |                                       | 0.0 111          | JII         |                             | V <sub>D</sub> =    | 350 <b>veh/l</b>                   |
| o pc/h Und                           | der Base (                                     | Conditions   |                            |                                       |                  |             |                             |                     |                                    |
| V<br>(Veh/hr)                        | PHF  | Terrain  | %Truck                     | %Rv                                   |                  | $f_{HV}$    | f <sub>p</sub>              | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| 5300                                 | 0.92   | Level  | 2                          | 0                                     | 0                | .990        | 1.00                        | 58                  | 18                                 |
| 960                                  | 0.92   | Level  | 2                          | 0                                     | 0                | .990        | 1.00                        | 105                 | 54                                 |
| 250                                  | 0.00   | 1 1  |                            |                                       | +                | 000         | 1.00                        | 20                  | .4                                 |
|                                      |  | Level  | 2                          | 0                                     | 0                |             |                             | 38                  | 4                                  |
| Estimation of v <sub>12</sub>        |  |  |                            |                                       |                  |             | Diverge Areas               |                     |                                    |
|                                      | /D \   |  |                            |                                       | -                |             | \/ . (\/ \/                 | \D                  |                                    |
|                                      | •        | 05.0)  |                            |                                       |                  |             |                             |                     |                                    |
| 1                                    |  |  |                            |                                       |                  |             | •                           |                     |                                    |
| _                                    | Equation (E                                    | XNIDIT 25-5)   |                            |                                       |                  |             | =                           | quation (Exh        | ibit 25-12)                        |
| •                                    | /F /: 05                                       | 4 05 5\  |                            | ·-                                    |                  |             | •                           |                     |                                    |
|                                      |  | -4 or 25-5)  |                            |                                       | . 1              |             |                             | ation 25-15         | or 25-16                           |
|                                      |  |  |                            |                                       |                  |             |                             |                     |                                    |
| · <del>-</del>                       |  | 0)   |                            | 0 0.0                                 |                  |             |                             | 05 40)              |                                    |
|                                      | (Equation 25                                   | -8)  |                            |                                       |                  |             | oc/n (Equation              | 1 25-18)            |                                    |
| 1                                    | 1 0  | 10   | 1 100 50                   | Capacity                              | y Ch             | 1           |                             | 11                  | Lioce                              |
| Actual                               |  | apacity  | LOS F?                     | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ |                  |             | ì                           | 1                   | LOS F                              |
|                                      | <u> </u>                                       |  |                            | _                                     | .,               |             |                             |                     | No                                 |
|                                      | Exhibit 25-7                                   |  |                            |                                       | - V <sub>R</sub> | 4764        | _                           |                     | No                                 |
| <u> </u>                             |  |  |                            | V <sub>R</sub>                        |                  | 1054        | Exhibit 25-3                | 3 2100              | No                                 |
|                                      | 1  |  |                            | Flow En                               | 1                |             | ,                           |                     |                                    |
| Actual                               | <del>`</del>                                   | Desirable  | Violation?                 | <del>  ,.</del>                       | _                |             |                             |                     | Violation                          |
| <u> </u>                             |  | ·  |                            |                                       |                  |             |                             |                     | No                                 |
|                                      | •  |  |                            |                                       |                  |             |                             |                     | F)                                 |
|                                      | 0.0078 V <sub>12</sub> -                       | 0.00627 L <sub>A</sub>   |                            |                                       |                  |             | 0.0086 V <sub>12</sub> - 0. | .009 L <sub>D</sub> |                                    |
|                                      |  |  |                            |                                       |                  | ,           |                             |                     |                                    |
|                                      |  |  |                            |                                       | •                |             |                             |                     |                                    |
| nination                             |  |  |                            | Speed D                               | )eter            | minati      | on                          |                     |                                    |
| 5-19)                                |  |  |                            | $D_s = 0.4$                           | 458 <b>(E</b>    | xhibit 25   | -19)                        |                     |                                    |
| S <sub>R</sub> = mph (Exhibit 25-19) |  |  |                            |                                       | .6 mpl           | n (Exhibit  | 25-19)                      |                     |                                    |
| S <sub>0</sub> = mph (Exhibit 25-19) |  |  |                            | $S_0 = 57$                            | '.3 mpl          | n (Exhibit  | 25-19)                      |                     |                                    |
| S = mph (Exhibit 25-14)              |  |  |                            |                                       |                  |             |                             |                     |                                    |
|                                      | SEB CHA 02/1! d AM  Exit 4     Co pc/h Und   V | SEB CHA 02/15/12 d AM  Exit 4  Terrain: Level  of S  o pc/h Under Base ( V(veh/hr) PHF 5300 0.92 960 0.92 960 0.92  Merge Areas  f V <sub>12</sub> V <sub>12</sub> = V <sub>F</sub> (P <sub>FM</sub> ) (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/hpc/h (Equation 25-2 or using Equation (Epc/hpc/hpc/hpc/hpc/hpc/hpc/hpc/hpc/hpc/h | SEB                        | SEB                                   | SEB              | SEB         | SEB                         | SEB                 | SEB                                |

|   |                            | NAIVIE                             | S AND RAM                |  |  | IXIXO               |                                       |  |                     |                                    |
|---|----------------------------|------------------------------------|--------------------------|--|--|---------------------|---------------------------------------|--|---------------------|------------------------------------|
| General In  | nformation                 |                                    |                          | Site Infor   |  |                     |                                       |  |                     |                                    |
| Analyst<br>Agency or Com<br>Date Performed<br>Analysis Time F | 02/                        | IA<br>/15/12                       | Ji<br>Ji                 | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | avel S                                 |                     |                                       |  |                     |                                    |
| Project Descript  | tion Exit 4                |                                    |                          | •  |  |                     |                                       |  |                     |                                    |
| Inputs  |                            |                                    |                          |  |  |                     |                                       |  |                     |                                    |
| Upstream Adj R  | •                          | Terrain: Leve                      | I                        |  |  |                     |                                       |  | Downstrea<br>Ramp   | m Adj                              |
|   | On                         |                                    |                          |  |  |                     |                                       |  | ✓ Yes               | ☑ On                               |
| ™ No  | Off                        |                                    |                          |  |  |                     |                                       |  | □ No                | ☐ Off                              |
| L <sub>up</sub> = f   | ft                         | S                                  | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4                    | 0.0 mi              | oh                                    |  | L <sub>down</sub> = | 1820 ft                            |
| u   | eh/h                       |                                    | Sketch (                 | show lanes, L <sub>A</sub>                                 |  |                     |                                       |  | V <sub>D</sub> =    | 510 <b>veh</b> /l                  |
| Conversion  | on to pc/h U               | nder Base                          | Conditions               |  | 1                                      | ,                   |                                       |  |                     |                                    |
| (pc/h)  | V<br>(Veh/hr)              | PHF                                | Terrain                  | %Truck   | %Rv                                    |                     | f <sub>HV</sub>                       | f <sub>p</sub>                         | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 5850                       | 0.92                               | Level                    | 2  | 0                                      | -                   | .990                                  | 1.00                                   | 642                 |                                    |
| Ramp<br>UpStream  | 760                        | 0.92                               | Level                    | 2  | 0                                      | 0                   | .990                                  | 1.00                                   | 83                  | 4                                  |
| DownStream  | 510                        | 0.93                               | Level                    | 5  | 0                                      | +                   | .976                                  | 1.00                                   | 56                  | 2                                  |
| Dominotioum.  | 310                        | Merge Areas                        | LCVCI                    | <u> </u>   |  |                     |                                       | Diverge Areas                          | 30                  |                                    |
| Estimation of v <sub>12</sub>                                 |                            |                                    |                          |  |  | ion d               | of v <sub>12</sub>                    | <u> </u>                               |                     |                                    |
|   |                            | / <sub>F</sub> ( P <sub>FM</sub> ) |                          |  |  |                     |                                       | = V <sub>R</sub> + (V <sub>F</sub> - V |                     |                                    |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                     |                            |                                    |                          |  | L <sub>EQ</sub> =                      |                     |                                       | Equation 25-8                          |                     |                                    |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)               |                            |                                    |                          |  |  |                     |                                       | .561 using Ed                          |                     | bit 25-12)                         |
| V <sub>12</sub> =   | pc/l                       |                                    | ,                        |  | P <sub>FD</sub> =<br>V <sub>12</sub> = |                     |                                       | 969 pc/h                               | ,                   |                                    |
| V <sub>3</sub> or V <sub>av34</sub>                           | pc/l                       | h (Equation 25                     | -4 or 25-5)              |  | V <sub>3</sub> or V <sub>av34</sub>    |                     |                                       | 453 <b>pc/h (Eq</b> u                  | ation 25-15         | or 25-16                           |
|   | > 2,700 pc/h?              |                                    |                          |  |  | 34 > 2,             |                                       | TYes ☑ No                              |                     |                                    |
| 0 4,0,1   | → 1.5 * V <sub>12</sub> /2 |                                    |                          |  |  |                     |                                       | Tyes  ✓ No                             |                     |                                    |
| If Yes,V <sub>12a</sub> =                                     | pc/                        | h (Equation 25                     | i-8)                     |  | If Yes,V <sub>12a</sub> =              |                     |                                       | c/h (Equation                          | 25-18)              |                                    |
| Capacity (  | Checks                     |                                    |                          |  | Capacity                               |                     | ecks                                  |  |                     |                                    |
|   | Actual                     | С                                  | apacity                  | LOS F?   |  |                     | Actual                                | Ca                                     | pacity              | LOS F                              |
|   |                            |                                    |                          |  | V <sub>F</sub>                         |                     | 6422                                  | Exhibit 25-1                           | 4 6780              | No                                 |
| $V_{FO}$  |                            | Exhibit 25-7                       |                          |  | $V_{FO} = V_{F}$                       | - V <sub>R</sub>    | 5588                                  | Exhibit 25-1                           | 4 6780              | No                                 |
|   |                            |                                    |                          |  | V <sub>R</sub>                         |                     | 834                                   | Exhibit 25-3                           | 3 2100              | No                                 |
| Flow Ente   | ring Merge                 | Influence A                        | rea                      |  | <del></del>                            | terir               | ng Dive                               | rge Influen                            | ce Area             |                                    |
|   | Actual                     | 1                                  | Desirable                | Violation?   |  | ı                   | Actual                                | Max Desiral                            |                     | Violation                          |
| V <sub>R12</sub>  |                            | Exhibit 25-7                       |                          |  | V <sub>12</sub>                        |                     | 3969                                  | Exhibit 25-14                          | 4400:All            | No                                 |
|   | ervice Dete                | rmination (                        | if not F)                |  | Level of                               | Ser                 | vice De                               | terminatio                             | n (if not l         | =)                                 |
| $D_{R} = 5.475$   | + 0.00734 v <sub>R</sub>   | + 0.0078 V <sub>12</sub> -         | 0.00627 L <sub>A</sub>   |  |  | $D_R = \frac{1}{2}$ | 4.252 + 0                             | .0086 V <sub>12</sub> - 0.             | 009 L <sub>D</sub>  |                                    |
| D <sub>R</sub> = (po  | c/mi/ln)                   |                                    |                          |  | D <sub>R</sub> = 32                    | 2.1 (pc             | :/mi/ln)                              |  |                     |                                    |
| LOS = (Ex   | xhibit 25-4)               |                                    |                          |  | LOS = D                                | (Exhi               | bit 25-4)                             |  |                     |                                    |
| Speed De  | termination                |                                    |                          |  | Speed D                                | )eter               | minati                                | on                                     |                     |                                    |
| M <sub>s</sub> = (Exil  | bit 25-19)                 |                                    |                          |  | $D_s = 0.2$                            | 438 <b>(</b> E      | xhibit 25                             | -19)                                   |                     |                                    |
| $S_{R}$ = mph (Exhibit 25-19)                                 |                            |                                    |                          |  |  | ).9 mpl             | n (Exhibit                            | 25-19)                                 |                     |                                    |
|   | (Exhibit 25-19)            |                                    |                          |  |  | i.8 mpl             | n (Exhibit                            | 25-19)                                 |                     |                                    |
| 1   | (Exhibit 25-14)            |                                    |                          |  | 1.                                     | -                   | n (Exhibit                            |  |                     |                                    |
| Copyright © 2007 University of Florida, All Rights Reserved   |                            |                                    |                          |  |  | •                   | · · · · · · · · · · · · · · · · · · · |  |                     |                                    |

|  | RA                               | MPS AND I  | RAMP JUN                 | CTIONS W  | /ORKSHE                             | EET  |  |                      |                                    |  |
|--|----------------------------------|--|--------------------------|---|-------------------------------------|--|--|----------------------|------------------------------------|--|
| General Infor  |                                  | •  |                          | Site Infor  |                                     |  |  |                      |                                    |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period   | SEB<br>CHA<br>02/1!<br>I AM      |  | Ju<br>Ju                 | eeway/Dir of Tr<br>Inction<br>Irisdiction<br>nalysis Year | avel                                | Southbound I-8<br>Exit 4 SB On-R<br>NYSDOT<br>2036 Diamond |  |                      |                                    |  |
| Project Description  | Exit 4                           |  |                          |   |                                     |  |  |                      |                                    |  |
| Inputs   |                                  | Torrain, Lovel                                   |                          |   |                                     |  |  | L                    |                                    |  |
| Jpstream Adj Ramp  |                                  | Terrain: Level                                   |                          |   |                                     |  |  | Downstre<br>Ramp     | am Adj                             |  |
| ✓ Yes ☐ On   | 1                                |  |                          |   |                                     |  |  | ☐ Yes                | □ On                               |  |
| □ No     Off   | f                                |  |                          |   |                                     |  |  | ✓ No                 | Off                                |  |
| - <sub>up</sub> = 1820   | ft                               |  |                          |   |                                     |  |  | L <sub>down</sub> =  | ft                                 |  |
| $V_{\rm u} = 760 \text{ Ve}$   |                                  | SF   | F = 56.0 mph<br>Sketch ( | show lanes, L <sub>A</sub>                                | S <sub>FR</sub> = 4                 | 0.0 mph  |  | V <sub>D</sub> =     | veh/h                              |  |
| Conversion to  | o pc/h Uni                       | l<br>der Base C                                  |                          | Silow larros, EA  | ' -D' R' F'                         |  |  |                      |                                    |  |
| (pc/h)   | V                                | PHF  | Terrain                  | %Truck  | %Rv                                 | f  | fp   | v = V/PHF            | x f <sub>HV</sub> x f <sub>p</sub> |  |
|  | (Veh/hr)                         | <del>                                     </del> |                          | -   |                                     | f <sub>HV</sub>  | <del>                                     </del> |                      |                                    |  |
| Freeway  | 5100                             | 0.92   | Level                    | 2   | 0                                   | 0.990  | 1.00   |                      | 5599                               |  |
| Ramp<br>UpStream   | 510<br>740                       | 0.93   | Level                    | 5 2   | 0                                   | 0.976  | 1.00   | <del></del>          | 562<br>834                         |  |
| DownStream   | 760                              | 0.92   | Level                    | 2   | 0                                   | 0.990  | 1.00   | <del> </del>         | 034                                |  |
| Journal of the state of the sta |                                  | Merge Areas                                      |                          |   |                                     | •  | Diverge Areas                                    | 5                    |                                    |  |
| Estimation of v <sub>12</sub>  |                                  |  |                          |   |                                     | ion of v <sub>12</sub>                                     |  |                      |                                    |  |
|  | V <sub>12</sub> = V <sub>F</sub> | (P <sub>EM</sub> )                               |                          |   | †                                   | ·-   | \/ . (\/ \                                       | / \D                 |                                    |  |
| L <sub>EQ</sub> = 1587.67 (Equation 25-2 or 25-3)  |                                  |  |                          |   |                                     | V 12   | $= V_R + (V_F - V_F)$                            |                      | n)                                 |  |
| P <sub>FM</sub> =  |                                  |  | on (Exhibit 25-5)        | 1   | L <sub>EQ</sub> =                   |  | (Equation 2                                      |                      |                                    |  |
| / <sub>12</sub> =  | 3438                             |  | (=                       |   | P <sub>FD</sub> =                   |  | using Equat                                      | .IOII (EXIIIDIL      | 23-12)                             |  |
| / <sub>3</sub> or V <sub>av34</sub>  |                                  | pc/h (Equatio                                    | n 25-4 or 25-            |   | V <sub>12</sub> =                   |  | pc/h (Equation                                   | 25 15 or 25          | 14)                                |  |
|  | 5)                               | _  |                          |   | V <sub>3</sub> or V <sub>av34</sub> | < 2.700 nc/h   | ? Tes N  |                      | - 10)                              |  |
| Is $V_3$ or $V_{av34} > 2,70$  |                                  |  |                          |   |                                     |  | Yes N  |                      |                                    |  |
| Is $V_3$ or $V_{av34} > 1.5$   | · <del>-</del>                   |  |                          |   | If Yes, V <sub>12a</sub> =          |  | pc/h (Equat                                      |                      |                                    |  |
| Yes,V <sub>12a</sub> =   | · ·                              | (Equation 25-                                    | 8)                       |   | 120                                 |  | pc/ii (Equat                                     | 1011 25-10)          |                                    |  |
| Capacity Che   |                                  | 1 0  | 11                       | 100.50  | Capacity Checks                     |  |  |                      |                                    |  |
|  | Actual                           | L Ca   | pacity                   | LOS F?  | \ \ \\ \\ \\                        | Actu   |  | apacity              | LOS F                              |  |
|  |                                  | E  |                          | l   | V <sub>F</sub>                      | 1/   | Exhibit 25                                       | <del></del>          | _                                  |  |
| $V_{FO}$   | 6161                             | Exhibit 25-7                                     |                          | No  | $V_{FO} = V_{F}$                    | - V <sub>R</sub>   | Exhibit 25                                       |                      |                                    |  |
|  |                                  |  |                          |   | V <sub>R</sub>                      |  | Exhibit 25                                       |                      |                                    |  |
| Flow Entering  |                                  |  |                          | V()=1=4: - O  | Flow En                             |  | erge Influe                                      |                      |                                    |  |
| · · · · · · · · · · · · · · · · · · ·  | Actual                           |  | esirable                 | Violation?  |                                     | Actual   | Max Des  | sirable              | Violation <sup>2</sup>             |  |
| V <sub>R12</sub>   | 4000                             | Exhibit 25-7                                     | 4600:All                 | No  | V <sub>12</sub>                     | Comitee t  | Exhibit 25-14                                    | <br> a== /!f == =    | <u> </u>                           |  |
| Level of Serv  |                                  |  |                          |   | <del></del>                         |  | Determinati                                      | <del></del>          | or r)                              |  |
| •  |                                  | 0.0078 V <sub>12</sub> - 0.00                    | OZILA                    |   |                                     |  | - 0.0086 V <sub>12</sub> -                       | 0.009 L <sub>D</sub> |                                    |  |
| $O_{R} = 28.2 \text{ (pc)}$  |                                  |  |                          |   |                                     | oc/mi/ln)  |  |                      |                                    |  |
| OS = D (Exhib  | <u> </u>                         |  |                          |   |                                     | xhibit 25-4)   | tion   |                      |                                    |  |
| Speed Detern   |                                  |  |                          |   |                                     | Determina  | τιοπ   |                      |                                    |  |
| $M_{S} = 0.430  (Exil$   |                                  |  |                          |   | ,                                   | xhibit 25-19)  | 10\  |                      |                                    |  |
|  | (Exhibit 25-19)                  |  |                          |   | ··                                  | ph (Exhibit 25-  |  |                      |                                    |  |
| S <sub>0</sub> = 50.0 mph (Exhibit 25-19)  |                                  |  |                          | $S_0 = m$   | ph (Exhibit 25-                     | 19)  |  |                      |                                    |  |
|  | (Exhibit 25-14)                  |  |                          |   | ľ                                   | ph (Exhibit 25-  | ·  |                      |                                    |  |

|   |   | VIII O AIND                             | RAMP JUNG           |  |                                       | <u> </u>                                     |                   |  |                                       |
|---|---|---|---------------------|--|---------------------------------------|--|-------------------|--|---------------------------------------|
| General Info  | rmation                                   |   |                     | Site Infor   | mation                                |  |                   |  |                                       |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 02/15                                     | 5/12                                    | Jui<br>Jui          | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | ravel S<br>E<br>N                     |  |                   |  |                                       |
| Project Description   | Exit 4                                    |   |                     |  |                                       |  |                   |  |                                       |
| Inputs  |   |   |                     |  |                                       |  |                   |  |                                       |
| Jpstream Adj Ramp   |   | Terrain: Level                          |                     |  |                                       |  |                   | Downstr<br>Ramp                        | eam Adj                               |
| Yes O   |   |   |                     |  |                                       |  |                   | ✓ Yes                                  | □ On                                  |
| ™ No □ O  | Ħ   |   |                     |  |                                       |  |                   | □ No                                   | ✓ Off                                 |
| <sub>-up</sub> = ft<br>/ <sub>u</sub> = veh/l                         | h   | S                                       | FF = 56.0 mph       | L <sub>down</sub> = V <sub>D</sub> =                   | 6100 ft<br>760 veh/h                  |  |                   |  |                                       |
| Conversion t  |   | dor Basa (                              |                     | show lanes, L <sub>A</sub>                             | LD' R' V f                            |  |                   |  |                                       |
|   | <u> </u>                                  |   |                     |  | T                                     | Ι,   | 1 ,               |  |                                       |
| (pc/h)  | (Veh/hr)                                  | PHF                                     | Terrain             | %Truck   | %Rv                                   | f <sub>HV</sub>                              | f <sub>p</sub>    | v = V/PF                               | IF x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 5500                                      | 0.92                                    | Level               | 2  | 0                                     | 0.990  | 1.00              |  | 6038                                  |
| Ramp  | 370                                       | 0.93                                    | Level               | 3  | 0                                     | 0.985  | 1.00              |  | 404                                   |
| UpStream  | 7/0                                       | 0.00                                    | Laval               | 2  |                                       | 0.000  | 1.00              |  | 024                                   |
| DownStream  | 760                                       | 0.92<br>Merge Areas                     | Level               | 2  | 0                                     | 0.990  | 1.00<br>Diverge A | \roac                                  | 834                                   |
| Estimation of v <sub>12</sub>   |   |   |                     |  |                                       | on of v <sub>12</sub>                        |                   | AIEaS                                  |                                       |
|   |   | (D )                                    |                     |  |                                       |  |                   |  |                                       |
|   | $V_{12} = V_F$                            | • | 05.0                |  |                                       | V <sub>12</sub>                              | $= V_R + (V$      | F - V <sub>R</sub> )P <sub>FD</sub>    |                                       |
| L <sub>EQ</sub> = 3353.44 (Equation 25-2 or 25-3)                     |   |   |                     |  | L <sub>EQ</sub> =                     |  | (Equation         | on 25-8 or 25                          | -9)                                   |
| P <sub>FM</sub> =   |   |   | on (Exhibit 25-5)   |  | P <sub>FD</sub> =                     |  | using E           | quation (Exhib                         | it 25-12)                             |
| / <sub>12</sub> =   | 3707                                      |   |                     |  | V <sub>12</sub> =                     |  | pc/h              |  |                                       |
| / <sub>3</sub> or V <sub>av34</sub>                                   | 2331 <sub> </sub><br>5)                   | pc/h (Equatio                           | n 25-4 or 25-       |  | V <sub>3</sub> or V <sub>av34</sub>   |  | pc/h (Equ         | uation 25-15 or 2                      | 5-16)                                 |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                          |   | e 🔽 No                                  |                     |  | Is V <sub>3</sub> or V <sub>av3</sub> | 4 > 2,700 pc/h                               | ?  ☐ Yes          | □ No                                   |                                       |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                          |   |   |                     |  | Is V <sub>3</sub> or V <sub>av3</sub> | ·<br><sub>4</sub> > 1.5 * V <sub>12</sub> /2 | ?                 | □ No                                   |                                       |
| f Yes,V <sub>12a</sub> =  | ·=  | Equation 25                             | _Q\                 |  | If Yes,V <sub>12a</sub> =             | 1 12   |                   | quation 25-18                          | )                                     |
| Capacity Ch   | •   | (Lqualion 23                            | -8)                 |  | 120                                   | / Checks                                     |                   |  | ,                                     |
| Sapacity Cit  | Actual                                    |   | apacity             | LOS F?   | Capacity                              | Actu   |                   | Capacity                               | LOS F                                 |
|   | Actual                                    |   | траску              | LOST:  | V <sub>F</sub>                        | Acit   |                   | bit 25-14                              | 1031                                  |
| 1/  | (440                                      | F.,L:L:4 0F 7                           |                     | NI-  |                                       | \/   | _                 |  | -                                     |
| $V_{FO}$  | 6442                                      | Exhibit 25-7                            |                     | No   | $V_{FO} = V_F$                        | · V <sub>R</sub>                             | _                 | bit 25-14                              |                                       |
|   |   |   |                     |  | V <sub>R</sub>                        |  |                   | bit 25-3                               |                                       |
| Flow Enterin  | _   |   |                     |  | Flow En                               |  |                   | fluence Ar                             |                                       |
|   | Actual                                    | 1                                       | Desirable           | Violation?   | \ \/                                  | Actual                                       | _                 | x Desirable                            | Violation?                            |
| V <sub>R12</sub>  | 4111                                      | Exhibit 25-7                            | 4600:All            | No   | V <sub>12</sub>                       | <u></u>                                      | Exhibit 2         |  | 15                                    |
| Level of Serv   |   | <u>_</u>                                |                     |  |                                       |  |                   | nation (if n                           | ot F)                                 |
|   | + 0.00734 v <sub>R</sub> + 0              | ).UU/8 V <sub>12</sub> - 0.0            | U62/ L <sub>A</sub> |  |                                       |  | + 0.0086 V        | ′ <sub>12</sub> - 0.009 L <sub>D</sub> |                                       |
| $O_{R} = 29.2 \text{ (p)}$  | •   |   |                     |  | 1                                     | c/mi/ln)                                     |                   |  |                                       |
| <u> </u>  | ibit 25-4)                                |   |                     |  |                                       | xhibit 25-4)                                 |                   |  |                                       |
| Speed Deter   | mination                                  |   |                     |  |                                       | etermina                                     | tion              |  |                                       |
| $M_{\rm S} = 0.455  (Ex$  | ibit 25-19)                               |   |                     |  | 3                                     | (hibit 25-19)                                |                   |  |                                       |
|   | S <sub>R</sub> = 49.6 mph (Exhibit 25-19) |   |                     |  |                                       | h (Exhibit 25-                               | 19)               |  |                                       |
| $\hat{S}_{R}$ = 49.6 mph  | (LAHIDIL 23-17)                           |   |                     |  | $S_R = mp$                            |  |                   |  |                                       |
|   | (Exhibit 25-19)                           |   |                     |  |                                       | h (Exhibit 25-                               | 19)               |  |                                       |

|   |   |                            | FREEWA   | Y WEA  | VING WOR        | KSHEE   | Т             |                |              |
|---|---|----------------------------|--|--|-----------------|---|---------------|----------------|--------------|
| Genera  | l Informat  | ion                        |  |  | Site Info       | rmation   |               |                |              |
| Analyst SEB Agency/Company CHA Date Performed 02/15/12 Analysis Time Period AM                      |   |                            |  | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Exit 2<br>NYSE  | I-87 Northbound<br>Exit 2E on to 2W off<br>NYSDOT<br>2036 Diamond |               |                |              |
| Inputs  |   |                            |  |  | •               |   |               |                |              |
| Weaving ทเ  | Freeway free-flow speed, S <sub>FF</sub> (mi/h) 56 Weaving number of lanes, N 4 Weaving seg length, L (ft) 815 Terrain Leve |                            | Weaving type<br>Volume ratio, VR<br>Weaving ratio, R |  |                 | A<br>0.25<br>0.32   |               |                |              |
| Conver  | sions to p  | c/h Unde                   | r Base C   | onditio  |                 |   | _             | _              |              |
| (pc/h)  | V   | PHF                        | Truck %  | RV %   | E <sub>T</sub>  | E <sub>R</sub>  | $f_{HV}$      | fp             | V            |
| $V_{o1}$  | 2930  | 0.92                       | 2  | 0  | 1.5             | 1.2   | 0.990         | 1.00           | 3216         |
| $V_{o2}$  | 0   | 0.92                       | 2  | 0  | 1.5             | 1.2   | 0.990         | 1.00           | 0            |
| $V_{w1}$  | 680   | 0.92                       | 2  | 0  | 1.5             | 1.2   | 0.990         | 1.00           | 746          |
| $V_{w2}$  | 320   | 0.92                       | 2  | 0  | 1.5             | 1.2   | 0.990         | 1.00           | 351          |
| V <sub>w</sub>  |   |                            |  | 1097   | V <sub>nw</sub> |   |               |                | 3216         |
| V   |   |                            |  |  | 1100            |   |               |                | 4313         |
| Weavin  | g and No  | n-Weavin                   | g Speeds   | 3  |                 |   |               |                |              |
|   |   |                            | Unconstr   | ained  |                 |   | Cons          | trained        |              |
| <i>t</i> =  |   | Weaving                    |  |  | aving (i = nw)  | Weavi   | ng (i = w)    | Non-Wea        | ving ( = nw) |
| a (Exhibit 2  |   | 0.15                       |  | <del>}</del>   | 0035            |   |               |                |              |
| b (Exhibit 2<br>c (Exhibit 2  |   | 0.97                       |  | <del>}</del>   | .30             |   |               |                |              |
| d (Exhibit 2  |   | 0.80                       |  |  | ).75            |   |               | ĺ              |              |
| Weaving intens  |   | 1.01                       |  | 1  | 0.50            |   |               |                |              |
| Weaving and n<br>speeds, Si (mi/  |   | 37.8                       | 6  | 4!   | 5.72            |   |               |                |              |
| Number of   | lanes required number of lanes  |                            | ned operation,                                       | Nw   | 1.32<br>1.40    |   |               |                |              |
|   | ✓ If Nw < Nw  | • •                        |  |  |                 |   | w (max) const | rained operati | on           |
| Weavin  | g Segmer  | nt Speed,                  | Density,   |  | f Service,      | and Cap   | oacity        |                |              |
|   |   |                            |  | 43.42  |                 |   |               |                |              |
| Weaving segment density, D (pc/mi/ln)   |   |                            |  | 24.83  |                 |   |               |                |              |
| Level of service, LOS   |   |                            |  | С  |                 |   |               |                |              |
| Capacity of base condition, c <sub>b</sub> (pc/h)   |   |                            |  | 6442   |                 |   |               |                |              |
| Capacity as a 15-minute flow rate, c (veh/h) Capacity as a full-hour volume, c <sub>h</sub> (veh/h) |   |                            |  | 6378   |                 |   |               |                |              |
|   | s a full-hour vol   | ume, c <sub>h</sub> (veh/h | 1)   | 5868   |                 |   |               |                |              |
| Notes   |   |                            |  |  |                 |   |               |                |              |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  |   |              | FREEWA           | Y WEA  | /ING WOR        | KSHEE             | Т   |                |                |  |
|--|---|--------------|------------------|--|-----------------|-------------------|---|----------------|----------------|--|
| Genera   | l Informat  | ion          |                  |  | Site Info       | rmation           |   |                |                |  |
| Analyst SEB Agency/Company CHA Date Performed 02/15/12 Analysis Time Period AM |   |              |                  | Freeway/Dir of Travel<br>Weaving Seg Location<br>Jurisdiction<br>Analysis Year |                 | Exit 2<br>NYSE    | I-87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2036 Diamond |                |                |  |
| Inputs   |   |              |                  |  |                 |                   |   |                |                |  |
| Weaving nu   | Freeway free-flow speed, S <sub>FF</sub> (mi/h) 56 Weaving number of lanes, N 4 Weaving seg length, L (ft) 810 Terrain Leve |              | IVVEAVIDICIANO R |  |                 | A<br>0.24<br>0.31 |   |                |                |  |
| Conver   | sions to p  | c/h Unde     | r Base C         | ondition   |                 |                   | 1   | 1              | •              |  |
| (pc/h)   | V   | PHF          | Truck %          | RV %   | E <sub>T</sub>  | E <sub>R</sub>    | $f_{HV}$  | fp             | V              |  |
| $V_{o1}$   | 3570  | 0.92         | 2                | 0  | 1.5             | 1.2               | 0.990   | 1.00           | 3919           |  |
| $V_{o2}$   | 0   | 0.92         | 2                | 0  | 1.5             | 1.2               | 0.990   | 1.00           | 0              |  |
| $V_{w1}$   | 780   | 0.92         | 2                | 0  | 1.5             | 1.2               | 0.990   | 1.00           | 856            |  |
| $V_{w2}$   | 350   | 0.92         | 2                | 0  | 1.5             | 1.2               | 0.990   | 1.00           | 384            |  |
| V <sub>w</sub>   | 1   |              | ,                | 1240   | V <sub>nw</sub> |                   |   | Į.             | 3919           |  |
| V  | 7   |              |                  |  |                 | l                 |   |                | 5159           |  |
| Weavin   | g and No  | n-Weavin     | g Speeds         | 3  |                 |                   |   |                |                |  |
|  |   |              | Unconstr         |  |                 |                   |   | trained        |                |  |
| /E 1 11 11 0   | 4.()  | Weaving      |                  |  | ving (i = nw)   | Weavii            | ng (i = w)  | Non-Wea        | ving ( = nw)   |  |
| a (Exhibit 24<br>b (Exhibit 24   |   | 0.15<br>2.20 |                  | 1  | .00             |                   |   |                |                |  |
| c (Exhibit 2   |   | 0.97         |                  | !  | .30             |                   |   |                |                |  |
| d (Exhibit 2   |   | 0.80         |                  |  | .75             |                   |   | ĺ              |                |  |
| Weaving intens   | ity factor, Wi  | 1.18         | }                | 0  | .60             |                   |   |                |                |  |
| Weaving and no<br>speeds, Si (mi/h   |   | 36.0         | 9                | 43   | 3.69            |                   |   |                |                |  |
| Number of I<br>Maximum n   | anes required<br>number of lanes<br>If Nw < Nw  | s, Nw (max)  |                  |  | 1.31<br>1.40    | if Nw > N         | v (max) consti  | rained onerati | on             |  |
|  |   | <u> </u>     |                  |  | f Service,      |                   |   | anioa opoidu   | <del>•••</del> |  |
|  | egment speed,   |              | <b>.</b> ,       | 41.59  |                 |                   | <b> ,</b>   |                |                |  |
| Weaving segment density, D (pc/mi/ln)  |   |              |                  | 31.01  |                 |                   |   |                |                |  |
| Level of service, LOS  |   |              |                  | D  |                 |                   |   |                |                |  |
| Capacity of base condition, c <sub>b</sub> (pc/h)                              |   |              | 6512             |  |                 |                   |   |                |                |  |
| Capacity as a 15-minute flow rate, c (veh/h)                                   |   |              |                  | 6448   |                 |                   |   |                |                |  |
| Capacity as a full-hour volume, c <sub>h</sub> (veh/h)                         |   |              |                  | 5932   |                 |                   |   |                |                |  |
| Notes  |   |              |                  |  |                 |                   |   |                |                |  |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

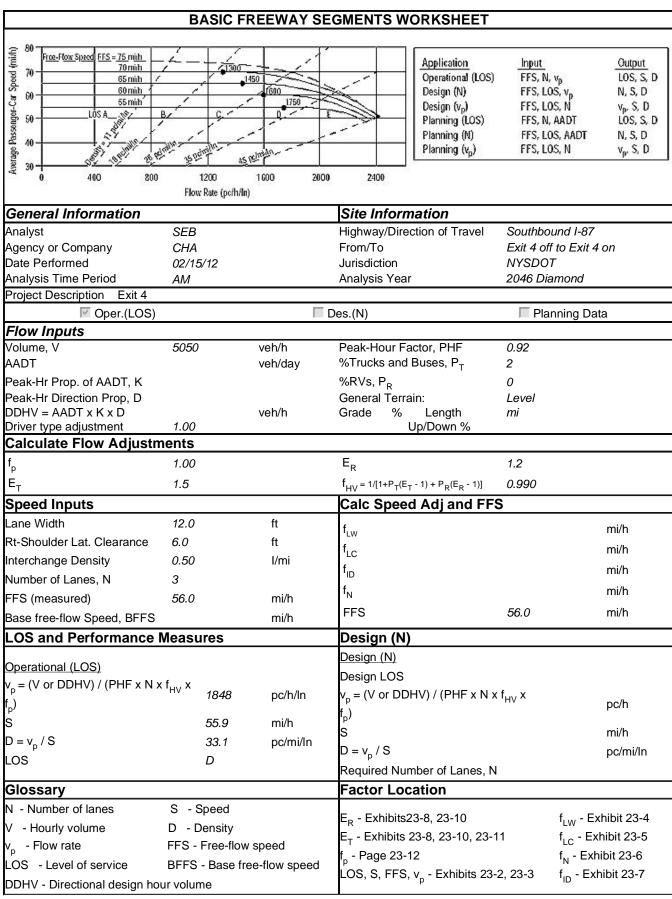
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  | BASIC F  | REEWAY SE                   | EGMENTS W  | ORKSHEET   |  |   |
|--|--|-----------------------------|--|--|--|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 60 mith 55 mith 50 LOS A 6 | B C C 45   | 1500 200                    | 0 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO<br>FFS, LO<br>FFS, LO<br>FFS, LO | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D          |
| General Information  | Flow Rate (pc/h/lin  | )                           | Site Inforn  | nation   |  |   |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period   | SEB<br>CHA<br>02/15/12<br>AM                                   |                             |  | ction of Travel  | Northbou<br>Exit 4 off<br>NYSDOT<br>2046 Dia                 | to Exit 4 on  |
| Project Description Exit 4  Oper.(LOS)   |  | Г                           | Des.(N)  |  | ☐ Plar   | nning Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D  | 2600   | veh/h<br>veh/day            | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade %        | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi                                |   |
| Driver type adjustment  Calculate Flow Adjustr   | 1.00<br>nents  |                             |  | Up/Down %  |  |   |
| f <sub>p</sub>   | 1.00   |                             | E <sub>R</sub>   |  | 1.2  |   |
| E <sub>T</sub>   | 1.5  |                             |  | <sub>r</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990  |   |
| Speed Inputs   |  |                             |  | d Adj and FFS  | <del></del>  |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>3<br>56.0                               | ft<br>ft<br>I/mi<br>mi/h    | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub>                         |  |  | mi/h<br>mi/h<br>mi/h<br>mi/h  |
| Base free-flow Speed, BFFS   |  | mi/h                        | FFS  |  | 56.0   | mi/h  |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ S $D = v_p / S$ LOS  |  | pc/h/ln<br>mi/h<br>pc/mi/ln | $f_p$ ) $S$ $D = v_p / S$  | HV) / (PHF x N x   | f <sub>HV</sub> x  | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |  |                             | Factor Loc   |  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base frour volume |                             | E <sub>R</sub> - Exhibits2<br>E <sub>T</sub> - Exhibits :<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_N$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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|   | BASIC FI   | REEWAY SE           | GMENTS W   | ORKSHEET   |   |  |
|---|--|---------------------|--|--|---|--|
| Dieses 30   | B C C  | 150<br>(600<br>1750 |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v <sub>p</sub><br>FFS, LOS, v <sub>p</sub><br>FFS, LOS, N<br>FFS, N, AAD<br>FFS, LOS, AA | v <sub>p</sub> , S, D<br>LOS, S, D                                   |
| <b>0</b> 400 200  | 1200<br>Flow Rate (pc/h/ln)                            | 1600 2000           | 2400   |  |   |  |
| General Information   |  |                     | Site Inform                                      |  |   |  |
| Analyst<br>Agency or Company<br>Date Performed  | SEB<br>CHA<br>12/12/2011                               |                     | Highway/Dire<br>From/To<br>Jurisdiction          | ection of Travel   | Northbound Exit 4 to Exit NYSDOT  |  |
| Analysis Time Period Project Description Exit 4   | AM   |                     | Analysis Yea                                     | r  | 2046 Diamoi   | nd   |
| ✓ Oper.(LOS)  |  |                     | Des.(N)  |  | ☐ Plannin   | g Data   |
| Flow Inputs   |  |                     | ,  |  |   |  |
| Volume, V<br>AADT   | 2650   | veh/h<br>veh/day    | Peak-Hour Fa                                     |  | 0.92  |  |
| Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D                  | 1.00   | veh/h               | %RVs, P <sub>R</sub><br>General Terra<br>Grade % | Length   | 0<br>Level<br>mi  |  |
| Driver type adjustment Calculate Flow Adjustn   |  |                     |  | Up/Down %  |   |  |
| f <sub>p</sub>  | 1.00   |                     | E <sub>R</sub>                                   |  | 1.2   |  |
| E <sub>T</sub>  | 1.5  |                     |  | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990   |  |
| Speed Inputs  |  |                     | Calc Spee  | d Adj and FFS  |   |  |
| Lane Width  | 12.0   | ft                  | $f_{LW}$   |  |   | mi/h   |
| Rt-Shoulder Lat. Clearance  | 6.0  | ft                  | f <sub>LC</sub>                                  |  |   | mi/h   |
| Interchange Density   | 0.50   | I/mi                | f <sub>ID</sub>                                  |  |   | mi/h   |
| Number of Lanes, N  | 3  |                     | f ID   |  |   | mi/h   |
| FFS (measured)  | 56.0   | mi/h                | 'N   |  | <b>50.0</b>   |  |
| Base free-flow Speed, BFFS  |  | mi/h                | FFS  |  | 56.0  | mi/h   |
| LOS and Performance   | Measures   |                     | Design (N  |  |   |  |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N )                          | x f <sub>HV</sub> x 970                                | pc/h/ln             | Design (N) Design LOS  V <sub>D</sub> = (V or DD | OHV) / (PHF x N x  | f <sub>HV</sub> x   |  |
| f <sub>p</sub> )<br>S   | 56.0   | mi/h                | f <sub>p</sub> )<br>S                            |  |   | pc/h<br>mi/h   |
| $D = v_p / S$   | 17.3   | pc/mi/ln            | S<br>D = v <sub>p</sub> / S                      |  |   | pc/mi/ln   |
| LOS   | В  |                     | F  | mber of Lanes, N   |   | ·<br>  |
| Glossary  |  |                     | Factor Loc                                       | cation   |   |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service | S - Speed D - Density FFS - Free-flow BFFS - Base free |                     | f <sub>p</sub> - Page 23-                        | 23-8, 23-10, 23-1  | 1 f <sub>LC</sub>   | - Exhibit 23-4<br>- Exhibit 23-5<br>- Exhibit 23-6<br>- Exhibit 23-7 |
| DDHV - Directional design ho  | ur volume  |                     |  | Varsion 5.2  |   | ed: 2/17/2012 1:43   |

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|  | BASIC F  | REEWAY SE                        | EGMENTS W  | ORKSHEET   |  |   |
|--|--|----------------------------------|--|--|--|---|
| Wassendae Passendae Carlo Mith To mith | Be C -   | 1600 200                         | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v <sub>p</sub><br>FFS, LOS,<br>FFS, N, Ai<br>FFS, LOS,<br>FFS, LOS, | v <sub>p</sub> N, S, D<br>N v <sub>p</sub> , S, D<br>ADT LOS, S, D<br>AADT N, S, D                                  |
| General Information  | Table New (points  | 7.                               | Site Infori  | mation   |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>AM                                   |                                  |  | ection of Travel   | Southbourn<br>Exit 5 to E.<br>NYSDOT<br>2046 Diam                                    | xit 4   |
| ✓ Oper.(LOS)   |  |                                  | Des.(N)  |  | ☐ Plann  | ing Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment   | 5850   | veh/h<br>veh/day<br>veh/h        | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terr<br>Grade %      | d Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi  |   |
| Calculate Flow Adjustr   |  |                                  |  | Op/Down //   |  |   |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.00<br>1.5  |                                  | E <sub>R</sub> f <sub>1.07</sub> = 1/[1+P <sub>7</sub> (E                          | E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 1.2<br>0.990   |   |
| Speed Inputs   |  |                                  |  | ed Adj and FFS   |  |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured) Base free-flow Speed, BFFS   | 12.0<br>6.0<br>0.50<br>3<br>56.0                               | ft<br>ft<br>I/mi<br>mi/h<br>mi/h | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS                 | a Aujuna i i o   | 56.0   | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h  |
| LOS and Performance  |  | 1111/11                          | Dosign (N  | `  |  |   |
| Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ $S$ $D = v_p / S$ $LOS$   |  | pc/h/ln<br>mi/h<br>pc/mi/ln      | Design (N) Design (N) Design LOS $v_p = (V \text{ or } DE)$ $f_p)$ S $D = v_p / S$ | )<br>DHV) / (PHF x N x t   | f <sub>HV</sub> x  | pc/h<br>mi/h<br>pc/mi/ln  |
|  | <del>-</del>   |                                  |  | mber of Lanes, N   |  |   |
| Glossary  N - Number of lanes  V - Hourly volume  v <sub>p</sub> - Flow rate  LOS - Level of service  DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flov BFFS - Base frour volume |                                  | f <sub>p</sub> - Page 23-  | 23-8, 23-10<br>23-8, 23-10, 23-11  | 1 f<br>f   | L <sub>W</sub> - Exhibit 23-4<br>L <sub>C</sub> - Exhibit 23-5<br>N - Exhibit 23-6<br>L <sub>D</sub> - Exhibit 23-7 |
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| Allow   Book  |  | BASIC F  | REEWAY SE     | GMENTS W                                | ORKSHEET  |  |  |
|---|--|--|---------------|---|---|--|--|
| Site Information   Site Information   Site Information   Analyst   SEB   Highway/Direction of Travel   Northbound i-87   From/To   Exit 2 to Exit 4   Durisdiction   NYSDOT   Analysis Time Period   PM   Analysis Year   2016 Diamond   Project Description   Exit 4   | Free-Flow Speed   FIS = 75 mith   70 mith   70 mith   70 mith   65 mith   60 mith   55 mith   50   10   55 mith   10   55 mi | B C C State of the state of the | 1600 200      | 2400                                    | Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) | FFS, N, v <sub>p</sub><br>FFS, LOS,<br>FFS, LOS,<br>FFS, N, A<br>FFS, LOS, | v <sub>p</sub> N, S, D<br>N v <sub>p</sub> , S, D<br>ADT LOS, S, D<br>AADT N, S, D |
| Analyst   | General Information  | Flow Rate (pc/h/lr   | 1)            | Site Inform                             | nation  |  |  |
| Agency or Company   |  | SER  |               |   |   | Northboun  | d I-87   |
| Date Performed         02/15/12 PM         Jurisdiction         NYSDOT 2016 Diamond           Project Description         Exit 4         Planning Data           Flow Inputs         Image: Peak-Hir Prop. of AADT, K Peak-Hir Prop. of AADT, K Peak-Hir Direction Prop. DDHV = AADT x K x D Priver type adjustment         Peak-Hir Direction Prop. DDHV = AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x R type Deak-Hir Prop. of AADT x K x D Priver type adjustment         Peak-Hir Prop. of AADT x R type Deak-Hir Prop. of AADT x  | •  |  |               |   | olion of mavor  |  |  |
| Project Description   | Date Performed   | _  |               |   |   |  |  |
| Des.(N)   | Analysis Time Period   | PM   |               | Analysis Year                           | r   | 2016 Diam  | nond   |
| Flow Inputs   | Project Description Exit 4   |  |               |   |   |  |  |
| Volume, V 5400 veh/h veh/day Weh/h Peak-Hour Factor, PHF 0.86 AADT Veh/day WTrucks and Buses, $P_T$ 2 Peak-Hr Direction Prop. D General Terrain: Level DDHV = AADT x K x D veh/h Grade % Length mi Driver type adjustment 1.00 Up/Down % Design (N) Design (N) Design (N) September 1.00 Terrain: Level Michael September 1.00 Terrain September 1.00 T   | Oper.(LOS)   |  |               | Des.(N)                                 |   | ☐ Planr  | ing Data   |
| Peak-Hr Prop. of AADT, K Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop. D General Terrain: Level DDHV = AADT x K x D veh/h Grade % Length $mi$ Driver type adjustment 1.00 $M$ Length $mi$ Up/Down % $M$ Length $mi$ Up/Down % $M$ Length $mi$ Up/Down % $M$ Length $M$ Up/Down % $M$ Mi/h Length $M$ Length $M$ Up/Down % $M$ Mi/h Length $M$ Length $M$ Up/Down % $M$ Mi/h Length $M$ Length $M$ Up/Down % $M$ Mi/h Length $M$ Length $M$ Mi/h Mi/h Length $M$ Mi/h Length $M$ Mi/h Mi/h Length $M$ Mi/h Mi/h Length $M$ Mi/h Mi/h Length $M$ Mi/h Mi/h Length $M$ Mi/h Mi/h Length $M$ Mi/h Mi/h Length $M$ Mi/h Mi/h Length $M$ Mi/h Mi/h Mi/h Mi/h Mi/h Mi/h Mi/h Mi/h   | Flow Inputs  |  |               |   |   |  |  |
| Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D Veh/h General Terrain: Level Grade % Length mi Up/Down % Up/Down   |  | 5400   |               |   | •   |  |  |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D DDHV = AADT x K x D DTVier type adjustment 1.00  Calculate Flow Adjustments $ f_{p}                                    $  |  |  | ven/day       |   | buses, P <sub>T</sub>   |  |  |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  |  |  |               | • | nim.  | -  |  |
| Driver type adjustment   1.00   Up/Down %   |  |  | veh/h         |   |   |  |  |
| Calculate Flow Adjustments $f_p$ 1.00 $E_R$ 1.2 $E_T$ 1.5 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]}$ 0.990Speed InputsLane Width12.0ft $f_{LW}$ $mi/h$ Rt-Shoulder Lat. Clearance6.0ft $f_{LW}$ $mi/h$ Interchange Density0.50 $1/mi$ $f_{LC}$ $mi/h$ Number of Lanes, N3 $f_{ID}$ $mi/h$ $mi/h$ FFS (measured)56.0 $mi/h$ FFS56.0 $mi/h$ Base free-flow Speed, BFFS $mi/h$ FFS $56.0$ $mi/h$ LOS and Performance MeasuresDesign (N)Operational (LOS)<br>Vp = (V or DDHV) / (PHF x N x $f_{HV}$ x<br>$f_p$ )<br>S $2114$<br>S $pc/h/ln$<br>yp = (V or DDHV) / (PHF x N x $f_{HV}$ x<br>$f_p$ )<br>S $pc/h$<br>SD = vp / S<br>Required Number of Lanes, N $pc/mi/ln$<br>$f_p$ $f_p$<br>S<br>Required Number of Lanes, NGlossaryFactor Location $f_{LW}$ - Exhibit 23-4<br>$f_p$ - Exhibit 23-8, 23-10, 23-11<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{N}$ - Exhibit 23-7<br>$f_{N}$ - Exhibit 23-7<br>   |  | 1.00   | VOIIIII       |   |   | ****   |  |
|   |  | nents  |               |   | •   |  |  |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  | f <sub>p</sub>   | 1.00   |               | E <sub>R</sub>                          |   | 1.2  |  |
| Calc Speed Adj and FFS  |  | 1.5  |               |   | <sub>r</sub> - 1) + P <sub>P</sub> (E <sub>P</sub> - 1)]                          | 0.990  |  |
| Lane Width 12.0 ft Rt-Shoulder Lat. Clearance 6.0 ft Interchange Density 0.50 l/mi Number of Lanes, N 3 sers (measured) 56.0 mi/h $f_{LC}$ $f_{LC}$ mi/h $f_{LC}$ $f_{L$  | ·  |  |               |   |   | }  |  |
| Rt-Shoulder Lat. Clearance 6.0 ft Interchange Density 0.50 l/mi $f_{LC}$ mi/h Number of Lanes, N 3 FFS (measured) 56.0 mi/h $f_{N}$ $f_{N}$ mi/h $f_{N}$ $f_{N}$ mi/h $f_{N}$ $f_{N}$ mi/h $f_{N}$ $f_$  | · · · · · · · · · · · · · · · · · · ·  | 12.0   | ft            |   | a raj ana i i e   | <u> </u>   |  |
| Interchange Density $0.50$ I/mi Number of Lanes, N $3$ FFS (measured) $56.0$ mi/h $f_{\rm N}$ mi/h $f_{\rm N}$ mi/h $f_{\rm N}$ mi/h $f_{\rm N}$ mi/h $f_{\rm N}$ mi/h $f_{\rm N}$ mi/h $f_{\rm N}$ mi/h $f_{\rm N}$ mi/h $f_{\rm N}$ mi/h $f_{\rm N}$ mi/h $f_{\rm N}$ mi/h $f_{\rm N}$ $f_{\rm N}$ mi/h $f_{\rm N}$ $f_$  |  | _  |               |   |   |  |  |
| Number of Lanes, N 3  FFS (measured) 56.0 mi/h  Base free-flow Speed, BFFS mi/h  LOS and Performance Measures  Design (N)  Design LOS $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_p)$ $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_p)$ $V_p =$   |  |  |               | f <sub>LC</sub>                         |   |  | mi/h   |
| FFS (measured) $56.0$ mi/h Base free-flow Speed, BFFS mi/h  FFS $56.0$ mi/h FFS $56.0$ mi/h FFS $56.0$ mi/h FFS $56.0$ mi/h FFS $56.0$ mi/h FFS $56.0$ mi/h FFS $56.0$ mi/h FFS $56.0$ mi/h FFS $56.0$ mi/h FFS $56.0$ mi/h FFS $56.0$ mi/h FFS $56.0$ mi/h FFS $56.0$ mi/h FFS $56.0$ mi/h Design (N) Design LOS $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_{PV} \times f_$   | •  |  | 71111         | $f_{ID}$                                |   |  | mi/h   |
| Base free-flow Speed, BFFS mi/h  LOS and Performance Measures  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ S $D = v_p / S$ LOS $E$ Design (N)  Design LOS $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$ S $D = v_p / S$ $D = v_p / S$ $D = v_p / S$ Required Number of Lanes, N  Factor Location  E  Required Number of Lanes, N  Factor Location  E $E_T - Exhibits 23-8, 23-10$ E $E_T - Exhibits 23-8, 23-10$ E $E_T - Exhibits 23-8, 23-10$ E $E_T - Exhibits 23-8, 23-10$ F $E_T - Exhi$   |  |  | mi/b          | f <sub>N</sub>                          |   |  | mi/h   |
| LOS and Performance Measures  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_{PV} $                      | · ·  | 36.0   |               |   |   | 56.0   | mi/h   |
| Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_{PV} \times f_$ | ·  |  | mi/n          |   |   |  | ,  |
| Design LOS $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times 2114)$ pc/h/ln $f_p$ )  Solution $F_p$   | LOS and Performance  | weasures   |               |   |   |  |  |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$  | Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N :   | x f <sub>HV</sub> x  | nc/h/ln       | Design LOS                              | HV) / (PHF x N x  | f <b>x</b>   |  |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$  | $f_p$ )  |  | F-97          | . 5                                     | ,   | ПV -   | pc/h   |
| $ \begin{array}{cccccccccccccccccccccccccccccccccccc$   | S  | 53.5   | mi/h          |   |   |  | mi/h   |
| Required Number of Lanes, N    Required Number of Lanes, N  | $D = v_p / S$  | 39.5   | pc/mi/ln      |   |   |  |  |
| GlossaryN - Number of lanesS - SpeedV - Hourly volumeD - Density $E_R$ - Exhibits 23-8, 23-10 $E_R$ - Exhibit 23-4 $E_R$ - Exhibits 23-8, 23-10, 23-11 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10, 23-11 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10, 23-11 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10, 23-11 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10, 23-11 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10, 23-11 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10, 23-11 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10, 23-11 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10, 23-11 $E_R$ - Exhibit 23-6 $E_R$ - Exhibits 23-8, 23-10, 23-11 $E_R$ - Exhibit 23-7  | LOS  | E  |               | · ·                                     | mbor of Lanca N   |  | ρωπι/π   |
| N - Number of lanes S - Speed $E_R$ - Exhibits 23-8, 23-10 $E_R$ - Exhibit 23-8 $E_R$ - Exhibits 23-8, 23-10 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10 $E_R$ - Exhibit 23-5 $E_R$ - Exhibits 23-8, 23-10 $E_R$ - Exhibit 23-5 $E_R$ - Exhibit 23-6 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-7 $E_R$ - Exhibit 23-8 $E_R$ - Exh   | [<br>Glossary  |  |               |   |   |  |  |
| V - Hourly volume D - Density $E_R$ - Exhibits 23-8, 23-10 $f_{LW}$ - Exhibit 23-4 $f_{LC}$ - Exhibit 23-5 $f_{DC}$ - Flow rate FFS - Free-flow speed LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, $V_R$ - Exhibits 23-2, 23-3 $f_{DC}$ - Exhibit 23-7   |  | S - Speed  |               | l actor Loc                             | ,41011  |  |  |
| $v_p$ - Flow rate FFS - Free-flow speed LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, $v_p$ - Exhibits 23-8, 23-10, 23-11 $f_{C}$ - Exhibit 23-6 LOS, S, FFS, $v_p$ - Exhibits 23-2, 23-3 $f_{C}$ - Exhibit 23-7  |  | · ·  |               | E <sub>R</sub> - Exhibits2              | 23-8, 23-10   | 1  | <sub>LW</sub> - Exhibit 23-4   |
| LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, v <sub>z</sub> - Exhibits 23-2, 23-3 f <sub>10</sub> - Exhibit 23-7   | -  | =  | v speed       | E <sub>T</sub> - Exhibits               | 23-8, 23-10, 23-1 <sup>-1</sup>   | 1 1  | LC - Exhibit 23-5  |
| LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, v <sub>z</sub> - Exhibits 23-2, 23-3 f <sub>15</sub> - Exhibit 23-7   | F  |  |               | f <sub>p</sub> - Page 23-1              | 12  |  |  |
| DDHV - Directional design hour volume   |  |  | ee-riow speed | F                                       |   |  | • •  |
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|  | BASIC F  | REEWAY SE                                | GMENTS W   | ORKSHEET   |   |  |
|--|--|--|--|--|---|--|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 70 mith 65 mith 55 mith 55 mith 60 mith 65 mith 60 mith 65 mith 60 mith 65 mith 60 mith 65 mith 60 mith 65 mi | B C C  | 450<br>(600<br>1750<br>0<br>1600<br>2001 | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v<br>FFS, LOS<br>FFS, N, A<br>FFS, LOS<br>FFS, LOS | , v <sub>p</sub> N, S, D<br>, N v <sub>p</sub> , S, D<br>ADT LOS, S, D<br>, AADT N, S, D               |
| General Information  | Flow Rate (pc/h/lin                                    | 1  | Site Inforn  | nation   |   |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period   | SEB<br>CHA<br>02/15/12<br>PM                           |  |  | ction of Travel  | Southbou<br>Exit 4 to E<br>NYSDOT<br>2016 Diar                      | Exit 2   |
| Project Description Exit 4  Oper.(LOS)   |  | Г  | Des.(N)  |  | □ Plan  | ning Data  |
| Flow Inputs  |  |  | De3.(N)  |  | , i ian   | ing Data   |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K<br>Peak-Hr Direction Prop, D   | 3850   | veh/h<br>veh/day                         | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level   |  |
| DDHV = AADT x K x D Driver type adjustment  Calculate Flow Adjustr   | 1.00<br>nents  | veh/h                                    | Grade %  | Length<br>Up/Down %  | mi  | _  |
| f <sub>p</sub>   | 1.00   |  | E <sub>R</sub>   |  | 1.2   |  |
| E <sub>T</sub>   | 1.5  |  | • •  | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990   |  |
| Speed Inputs   |  |  |  | d Adj and FFS  | <b>3</b>  |  |
| Lane Width   | 12.0   | ft                                       |  |  |   | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft                                       | f <sub>LW</sub>  |  |   |  |
| Interchange Density  | 0.50   | l/mi                                     | f <sub>LC</sub>  |  |   | mi/h   |
| Number of Lanes, N   | 3  |  | $f_{ID}$   |  |   | mi/h   |
| FFS (measured)   | 56.0   | mi/h                                     | f <sub>N</sub>   |  |   | mi/h   |
| Base free-flow Speed, BFFS   |  | mi/h                                     | FFS  |  | 56.0  | mi/h   |
| LOS and Performance  | Measures   |  | Design (N)   |  |   |  |
| Operational (LOS)<br>$V_p = (V \text{ or DDHV}) / (PHF \times N)$<br>$f_p$ )<br>S<br>$D = V_p / S$<br>LOS  |  | pc/h/ln<br>mi/h<br>pc/mi/ln              | <u>Design (N)</u><br>Design LOS                                      | HV) / (PHF x N x   | f <sub>HV</sub> x   | pc/h<br>mi/h<br>pc/mi/ln   |
|  |  |  |  | mber of Lanes, N   |   |  |
| Glossary   |  |  | Factor Loc   | cation   |   |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service  | S - Speed D - Density FFS - Free-flow BFFS - Base from |  | f <sub>p</sub> - Page 23-  | 23-8, 23-10, 23-1  | 1   | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{D}$ - Exhibit 23-7 |
| DDHV - Directional design ho   |  |  |  | Version 5.3  |   | erated: 2/15/2012 2:20   |

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|  | BASIC F   | REEWAY SE                 | GMENTS W  | ORKSHEET   |  |   |
|--|---|---------------------------|---|--|--|---|
| S0   Free-Flow Speed   FFS = 75 migh   70 migh   70 migh   65 migh   60 migh   55 migh   60 migh   65 migh   60 migh   65 might   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 might   65 might   65 migh   65 | B C C   | 450<br>(500)<br>1750<br>0 |   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input<br>FFS, N, 1<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D            |
| <b>0</b> 400 800   | 1200<br>Flow Rate (pc/h/lin                           | 1600 2000<br>)            | 2400  |  |  |   |
| General Information  |   |                           | Site Inform   |  |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>PM                          |                           | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea | ection of Travel   | Northbou<br>Exit 4 off<br>NYSDOT<br>2016 Dia                       | to Exit 4 on  |
| ✓ Oper.(LOS)   |   | П                         | Des.(N)   |  | ☐ Plan   | ning Data   |
| Flow Inputs  |   |                           | ( )   |  |  | 3   |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K  | 4450  | veh/h<br>veh/day          | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub>     |  | 0.86<br>2<br>0   |   |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment   | 1.00  | veh/h                     | General Terra<br>Grade %                                | ain:<br>Length<br>Up/Down %  | Level<br>mi  |   |
| Calculate Flow Adjustr   | nents   |                           |   | •  |  |   |
| $f_p$  | 1.00  |                           | E <sub>R</sub>  |  | 1.2  |   |
| E <sub>T</sub>   | 1.5   |                           | f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E                | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |   |
| Speed Inputs   |   |                           | Calc Spee   | d Adj and FFS  | }  |   |
| Lane Width   | 12.0  | ft                        | f <sub>LW</sub>   |  |  | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0   | ft                        |   |  |  | mi/h  |
| Interchange Density  | 0.50  | I/mi                      | f <sub>LC</sub>   |  |  |   |
| Number of Lanes, N   | 3   |                           | f <sub>ID</sub>   |  |  | mi/h  |
| FFS (measured)   | 56.0  | mi/h                      | t <sub>N</sub>  |  |  | mi/h  |
| Base free-flow Speed, BFFS   |   | mi/h                      | FFS   |  | 56.0   | mi/h  |
| LOS and Performance  | Measures  |                           | Design (N   | )  |  |   |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N :   |   | pc/h/ln                   | Design (N)<br>Design LOS                                | )<br>)HV) / (PHF x N x :   | f <sub>HV</sub> x  |   |
| f <sub>p</sub> )   | <b>500</b>  | • 11                      | f <sub>p</sub> )  |  | •  | pc/h  |
| S<br>D :: / S  | 56.0  | mi/h                      | S   |  |  | mi/h  |
| $D = v_p / S$  | 31.1  | pc/mi/ln                  | $D = v_p / S$   |  |  | pc/mi/ln  |
| LOS  | D   |                           | F   | mber of Lanes, N   |  |   |
| Glossary   |   |                           | Factor Loc  | cation   |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fro |                           | f <sub>p</sub> - Page 23-                               | 23-8, 23-10, 23-1  |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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|  | BASIC F  | REEWAY SI                                      | GMENTS W  | ORKSHEET   |  |   |
|--|--|--|---|--|--|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 60 mith 70 mith 55 mith 70 mi | B C C 45   | 150 (600 1750 1750 1750 1750 1750 1750 1750 17 | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO<br>FFS, LO<br>FFS, N,<br>FFS, LO | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D            |
| General Information  | Flow Rate (pc/h/lin                                  | )  | Site Inforn   | nation   |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>PM                         |  |   | ction of Travel  | Southboo<br>Exit 4 off<br>NYSDOT<br>2016 Dia                 | to Exit 4 on  |
| Oper.(LOS)   |  |  | Des.(N)   |  | ☐ Plar   | nning Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D  | 2700   | veh/h<br>veh/day<br>veh/h                      | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade % | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi                                |   |
| Driver type adjustment  Calculate Flow Adjustr   | 1.00<br>nents  |  |   | Up/Down %  |  |   |
| f <sub>p</sub>   | 1.00   |  | E <sub>R</sub>  |  | 1.2  |   |
| E <sub>T</sub>   | 1.5  |  | * *   | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990  |   |
| Speed Inputs   |  |  |   | d Adj and FFS  | <b>5</b>   |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>3<br>56.0                     | ft<br>ft<br>I/mi<br>mi/h                       | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS              |  | 56.0   | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h  |
| Base free-flow Speed, BFFS   | Magaziraa  | mi/h   |   |  |  | ·   |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ )  S $D = v_p / S$ LOS   |  | pc/h/ln<br>mi/h<br>pc/mi/ln                    | $f_p^p$ )<br>S<br>D = $v_p / S$   | HV) / (PHF x N x   | f <sub>HV</sub> x  | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |  |  | Factor Loc  | ation  |  |   |
| N - Number of lanes<br>V - Hourly volume<br>v <sub>p</sub> - Flow rate<br>LOS - Level of service<br>DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fr |  | f <sub>p</sub> - Page 23-   | 23-8, 23-10, 23-1  |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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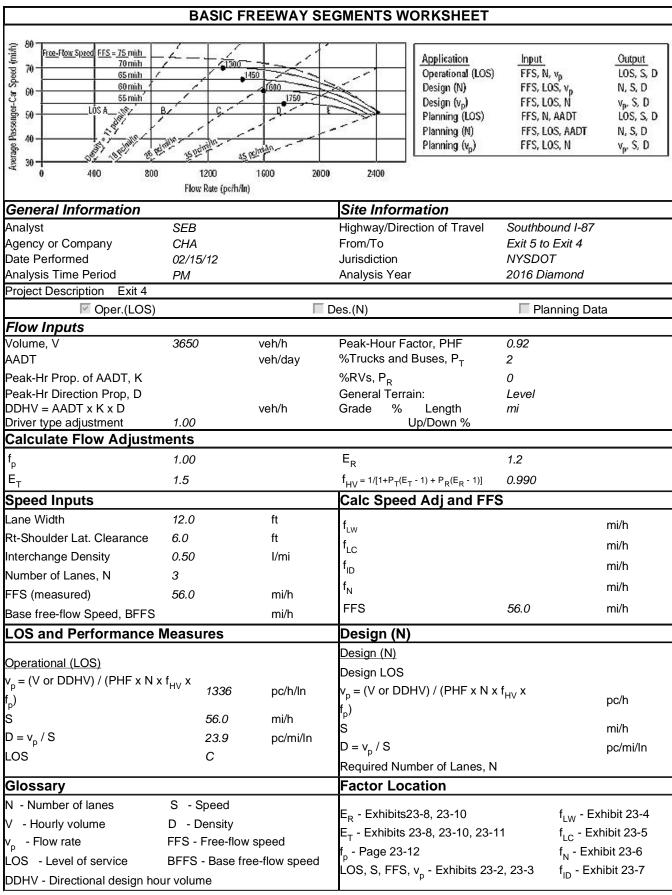
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|  | BASIC F                  | REEWAY SE    | GMENTS W                                 | ORKSHEET   |  |  |
|--|--------------------------|--------------|--|--|--|--|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 65 mith 55 mith 55 mith 55 mith 60 mith 60 mith 65 mith 60 mi | B C C                    | 1500 2000    | 2400                                     | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, 1<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D |
| General Information  | Flow Rate (pc/h/lin      | )            | Site Inforn                              | nation   |  |  |
| Analyst  | SEB                      |              |  | ection of Travel   | Northbou   | nd I-87  |
| Agency or Company  | CHA                      |              | From/To                                  | odon or mavor  | Exit 4 to L  | -  |
| Date Performed   | 02/15/12                 |              | Jurisdiction                             |  | NYSDOT   | · -  |
| Analysis Time Period   | PM                       |              | Analysis Yea                             | r  | 2016 Dia   | mond   |
| Project Description Exit 4   |                          |              |  |  |  |  |
| Oper.(LOS)   |                          |              | Des.(N)                                  |  | ☐ Plan   | ning Data  |
| Flow Inputs  | 5050                     | 1.0          |  | , DUE  | 0.00   |  |
| Volume, V<br>AADT  | 5650                     | veh/h        | Peak-Hour Fa<br>%Trucks and              |  | 0.86<br>2  |  |
|  |                          | veh/day      |  | buses, r <sub>T</sub>  |  |  |
| Peak-Hr Prop. of AADT, K<br>Peak-Hr Direction Prop, D  |                          |              | %RVs, P <sub>R</sub><br>General Terra    | ain:   | 0<br>Level   |  |
| DDHV = AADT x K x D  |                          | veh/h        | Grade %                                  | Length   | mi   |  |
| Driver type adjustment   | 1.00                     |              |  | Up/Down %  |  |  |
| Calculate Flow Adjustr   | nents                    |              |  |  |  |  |
| $f_p$  | 1.00                     |              | $E_R$                                    |  | 1.2  |  |
| E <sub>T</sub>   | 1.5                      |              | f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |  |
| Speed Inputs   |                          |              | Calc Spee                                | d Adj and FFS  | <b>3</b>   |  |
| Lane Width   | 12.0                     | ft           |  | •  |  | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0                      | ft           | f <sub>LW</sub>                          |  |  |  |
| Interchange Density  | 0.50                     | I/mi         | f <sub>LC</sub>                          |  |  | mi/h   |
| Number of Lanes, N   | 3                        |              | $f_ID$                                   |  |  | mi/h   |
| FFS (measured)   | 56.0                     | mi/h         | $f_N$                                    |  |  | mi/h   |
| Base free-flow Speed, BFFS   | 30.0                     | mi/h         | FFS                                      |  | 56.0   | mi/h   |
| LOS and Performance  | Moscuros                 | 1111/11      | Dosign (N)                               | \  |  |  |
| LOS and Performance  | Weasures                 |              | Design (N)  Design (N)                   | )  |  |  |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N   | x f <sub>HV</sub> x 2212 | pc/h/ln      | Design LOS                               | )HV) / (PHF x N x  | f <sub>HV</sub> x                                      | 4  |
| t <sub>p</sub> )   |                          | •            | f <sub>p</sub> )                         |  |  | pc/h   |
| S  | 51.5                     | mi/h         | S S                                      |  |  | mi/h   |
| $D = v_p / S$  | 43.0                     | pc/mi/ln     | $D = v_p / S$                            |  |  | pc/mi/ln   |
| LOS  | E                        |              | F  | mber of Lanes, N   |  | L  |
| Glossary   |                          |              | Factor Loc                               |  |  |  |
| N - Number of lanes  | S - Speed                |              |  |  |  |  |
| V - Hourly volume  | D - Density              |              | E <sub>R</sub> - Exhibits2               |  |  | f <sub>LW</sub> - Exhibit 23-4   |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow          | / speed      | _ ·                                      | 23-8, 23-10, 23-1  | 1  | f <sub>LC</sub> - Exhibit 23-5   |
| LOS - Level of service   | BFFS - Base fr           |              | f <sub>p</sub> - Page 23-                |  |  | f <sub>N</sub> - Exhibit 23-6  |
| DDHV - Directional design ho   |                          | oo now speed | LOS, S, FFS                              | , v <sub>p</sub> - Exhibits 23-2   | 2, 23-3  | f <sub>ID</sub> - Exhibit 23-7   |
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|   | BASIC F                       | REEWAY SE   | GMENTS W  | ORKSHEET   |  |  |
|---|-------------------------------|---|---|--|--|--|
| Froe-Flow Spzed   FFS = 75 mith   70 mith   70 mith   70 mith   65 mith | By C.                         | 450 (600 1750 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 |   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AAD FFS, LOS, N | Output  LOS, S, D  N, S, D  V <sub>p</sub> , S, D  LOS, S, D  N, S, D  v <sub>p</sub> , S, D |
| 0 400 800   | ) 1200<br>Flow Rate (pc/h/lin | 1600 2000<br>)                                    | 2400  |  |  |  |
| General Information   |                               |   | Site Inform   | nation   |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period  | CLD<br>CHA<br>07/29/13<br>PM  |   | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea | ection of Travel   | Northbound I-8<br>Exit 5 to Exit 6<br>NYSDOT<br>2016 Diamona   |  |
| Project Description Exit 4  Oper.(LOS)  |                               |   | Des.(N)   |  | ☐ Planning   | Data   |
| Flow Inputs   |                               |   | Des.(IV)  |  | r laming   | Data   |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K   | 5750                          | veh/h<br>veh/day                                  | Peak-Hour Face %Trucks and %RVs, P <sub>R</sub>         | Buses, P <sub>T</sub>  | 0.86<br>2<br>0   |  |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjustr   | 1.00                          | veh/h   | General Terr<br>Grade %                                 | ain:<br>Length<br>Up/Down %  | Level<br>mi  |  |
|   | 1.00                          |   |   |  | 1.2  |  |
| f <sub>p</sub><br>E <sub>T</sub>  | 1.00<br>1.5                   |   | E <sub>R</sub>  | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |  |
| Speed Inputs  | 1.0                           |   |   | d Adj and FFS  |  |  |
| I ane Width   | 12.0                          | ft  |   | a Auj ana 113  |  | .,,  |
| Rt-Shoulder Lat. Clearance  | 6.0                           | ft  | f <sub>LW</sub>   |  |  | mi/h   |
| Interchange Density   | 0.50                          | l/mi  | f <sub>LC</sub>   |  |  | mi/h   |
| Number of Lanes, N  | 4                             |   | $f_{ID}$  |  |  | mi/h   |
| FFS (measured)  | 56.0                          | mi/h  | f <sub>N</sub>  |  |  | mi/h   |
| Base free-flow Speed, BFFS  |                               | mi/h  | FFS   |  | 56.0   | mi/h   |
| LOS and Performance   | Measures                      |   | Design (N   | )  |  |  |
| Operational (LOS)<br>V <sub>p</sub> = (V or DDHV) / (PHF x N :<br>f <sub>p</sub> )  | x f <sub>HV</sub> x 1688      | pc/h/ln   | . 5   | )HV) / (PHF x N x f  | :<br>HV X  | pc/h   |
| S   | 56.0                          | mi/h  | r <sub>p</sub> )<br>S                                   |  |  | mi/h   |
| D = v <sub>p</sub> / S  | 30.1                          | pc/mi/ln  | $D = v_p / S$   |  |  | pc/mi/ln   |
| LOS   | D                             |   | · ·   | mber of Lanes, N   |  |  |
| Glossary  |                               |   | Factor Lo   | cation   |  |  |
| N - Number of lanes   | S - Speed                     |   | E <sub>R</sub> - Exhibits                               | 23-8 23-10   | f -  | Exhibit 23-4   |
| V - Hourly volume   | D - Density                   |   |   | 23-8, 23-10<br>23-8, 23-10, 23-11  | =  | Exhibit 23-5   |
| v <sub>p</sub> - Flow rate  | FFS - Free-flov               | speed   | f <sub>p</sub> - Page 23-                               |  |  | Exhibit 23-6   |
| LOS - Level of service  | BFFS - Base fr                | ee-flow speed                                     | 1 '   | , v <sub>p</sub> - Exhibits 23-2   |  | Exhibit 23-7   |
| DDHV - Directional design ho  | our volume                    |   |   | , <sub>p</sub> = 11110113 20-2   | , 'ID '  | EXHIDIT ZU-1   |
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| Agency or Company  Date Performed  7/29/13  Analysis Time Period  PM  Analysis Year  Project Description Exit 4  ✓ Oper.(LOS)  Flow Inputs  Volume, V  AADT  Peak-Hr Prop. of AADT, K  Peak-Hr Direction Prop, D  DHV = AADT x K x D  From/To  Jurisdiction  Des.(N)  Des.(N)  Peak-Hour Fa  veh/h  %RVs, P <sub>R</sub> General Terra  DDHV = AADT x K x D  Veh/h  Grade  Grade  Grade  From/To  Jurisdiction  Analysis Year  Peak-Hour Fa  veh/h  General Terra  general Terra | Application   Input   Output   Operational (LOS)   FFS, N, v <sub>p</sub>   LOS, S, S, Design (N)   FFS, LOS, N   V <sub>p</sub> , S, D Design (v <sub>p</sub> )   FFS, LOS, N   V <sub>p</sub> , S, D Planning (LOS)   FFS, N, AADT   LOS, S, Planning (M)   FFS, LOS, AADT   N, S, D Planning (v <sub>p</sub> )   FFS, LOS, N   V <sub>p</sub> , S, D  mation ection of Travel   Southbound I-87   Exit 6 to Exit 5 |
|--|---|
| General Information   Analyst CLD Highway/Direct   Agency or Company CHA From/To   Date Performed 7/29/13 Jurisdiction   Analysis Time Period PM Analysis Year   Project Description Exit 4   ✓ Oper.(LOS) Des.(N)    Flow Inputs  Volume, V 3500 veh/h Peak-Hour Fa veh/day %Trucks and %RVs, P <sub>R</sub> General Terra DDHV = AADT x K x D veh/h Grade %  | ection of Travel Southbound I-87  |
| Analyst CLD Highway/Direct Agency or Company CHA From/To Date Performed 7/29/13 Jurisdiction Analysis Time Period PM Analysis Year Project Description Exit 4  ✓ Oper.(LOS) Des.(N)  Flow Inputs  Volume, V 3500 veh/h Peak-Hour Fa AADT veh/day %Trucks and Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D  Highway/Direct From/To Des.(N)  Des.(N)  ✓ Reak-Hour Fa Veh/day %Trucks and Reak-Hr Direction Prop, D ODHV = AADT x K x D  Veh/h Grade %    | ection of Travel Southbound I-87  |
| ✓ Oper.(LOS)  Flow Inputs  Volume, V 3500 veh/h Peak-Hour Fa AADT veh/day %Trucks and  Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D  Des.(N)  Des.(N)  Reak-Hour Fa veh/h Geak-Hour Fa %RVs, P <sub>R</sub> General Terra  | NYSDOT  |
| Volume, V $3500$ veh/h Peak-Hour Fa AADT veh/day %Trucks and Peak-Hr Prop. of AADT, K %RVs, $P_R$ General Terra DDHV = AADT x K x D veh/h Grade %  | ☐ Planning Data   |
| DDHV = AADT x K x D veh/h Grade %  | Buses, P <sub>T</sub> 2 0   |
|  | Length <i>mi</i><br>Up/Down %   |
| Calculate Flow Adjustments   | 4.0   |
| $f_{p}$ 1.00 $E_{R}$ $f_{HIV} = 1/[1+P_{T}(E_{T})]$  | 1.2<br>1) + P <sub>p</sub> (E <sub>p</sub> -1)] 0.990   |
| 11V - 1-1  | $_{T}^{-1} + P_{R}(E_{R}^{-1})$ 0.990<br>d Adj and FFS  |
| Lane Width 12.0 ft $f_{LW}$ ft. Rt-Shoulder Lat. Clearance 6.0 ft Interchange Density 0.50 I/mi Number of Lanes, N 4 FFS (measured) 56.0 mi/h  | mi/h<br>mi/h<br>mi/h<br>mi/h  |
| Base free-flow Speed, BFFS mi/h  | <i>56.0</i> mi/h  |
|  | pc/h pc/mi/ln pc/mi/ln  |
| Glossary Factor Loc  |   |
| N - Number of lanes S - Speed  V - Hourly volume D - Density   | 23-8, 23-10 f <sub>LW</sub> - Exhibit 23-4<br>23-8, 23-10, 23-11 f <sub>LC</sub> - Exhibit 23-5   |

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|   | <u>KA</u>                       | VIF 3 AND                     | RAMP JUNG                | STICING W                    | OKKSHE  |  |                         |                                     |                                |  |  |
|---|---------------------------------|-------------------------------|--------------------------|------------------------------|---|--|-------------------------|-------------------------------------|--------------------------------|--|--|
| General Infor   | mation                          |                               |                          | Site Infor                   | mation  |  |                         |                                     |                                |  |  |
| Analyst   | SEB                             |                               | Fre                      | eeway/Dir of Tra             | avel i  | Northbound I-                            | 87                      |                                     |                                |  |  |
| Agency or Company                                     | CHA                             |                               | Ju                       | nction                       | [   | Exit 2W On-R                             | amp                     |                                     |                                |  |  |
| Date Performed  | 02/1!                           | 5/12                          | Ju                       | risdiction                   | I   | NYSDOT                                   | •                       |                                     |                                |  |  |
| analysis Time Period                                  | d PM                            |                               | An                       | alysis Year                  | :   | 2016 Diamono                             | t                       |                                     |                                |  |  |
| Project Description                                   | Exit 4                          |                               |                          |                              |   |  |                         |                                     |                                |  |  |
| nputs   |                                 |                               |                          |                              |   |  |                         |                                     |                                |  |  |
| Ipstream Adj Ramp                                     |                                 | Terrain: Level                |                          |                              |   |  |                         | Downstre<br>Ramp                    | eam Adj                        |  |  |
| ▼ Yes ☐ Or  |                                 |                               |                          |                              |   |  |                         | ☐ Yes                               | □ On                           |  |  |
| No  ✓ Of  | f                               |                               |                          |                              |   |  |                         | ™ No                                | ☐ Off                          |  |  |
| <sub>rup</sub> = 1100                                 | ft                              |                               | <sub>-F</sub> = 56.0 mph |                              | S <sub>FR</sub> = 4                             | 0.0 mph                                  |                         | L <sub>down</sub> =                 | ft                             |  |  |
| $V_{u} = 800 \text{ v}$                               | eh/h                            | 3                             | •                        | show lanes, L <sub>A</sub> , |   | o.o mpn                                  |                         | $V_D =$                             | veh/h                          |  |  |
| Conversion to   | o pc/h Un                       | der Base C                    |                          |                              | DKI   |  |                         |                                     |                                |  |  |
| (pc/h)  | V<br>(Veh/hr)                   | PHF                           | Terrain                  | %Truck                       | %Rv   | $f_{HV}$                                 | fp                      | v = V/PH                            | $F \times f_{HV} \times f_{p}$ |  |  |
| reeway  | 4650                            | 0.86                          | Level                    | 2                            | 0   | 0.990                                    | 1.00                    |                                     | 5461                           |  |  |
| Ramp  | 770                             | 0.92                          | Level                    | 2                            | 0   | 0.990                                    | 1.00                    |                                     | 845                            |  |  |
| JpStream  | 800                             | 0.92                          | Level                    | 2                            | 0   | 0.990                                    | 1.00                    | 1                                   | 878                            |  |  |
| DownStream  |                                 | 0.72                          | 2010.                    |                              | <u> </u>  | 0.770                                    |                         |                                     | 0.0                            |  |  |
|   |                                 | Merge Areas                   |                          |                              |   |  | Diverge Ar              | eas                                 |                                |  |  |
| stimation of  |                                 |                               |                          |                              | Estimati  | ion of v <sub>12</sub>                   |                         |                                     |                                |  |  |
|   |                                 | (D)                           |                          |                              |   |  | •                       |                                     |                                |  |  |
| $V_{12} = V_F (P_{FM})$                               |                                 |                               |                          |                              |   | V <sub>12</sub>                          | $_2 = V_R + (V_F)$      | - V <sub>R</sub> )P <sub>FD</sub>   |                                |  |  |
| L <sub>EQ</sub> = 1416.68 (Equation 25-2 or 25-3)     |                                 |                               |                          |                              |   |  | (Equation               | 25-8 or 25-                         | 9)                             |  |  |
| P <sub>FM</sub> = 0.581 using Equation (Exhibit 25-5) |                                 |                               |                          |                              |   |  | using Eq                | uation (Exhibi                      | t 25-12)                       |  |  |
| 12 =  | 3174                            | pc/h                          |                          |                              | P <sub>FD</sub> =<br>V <sub>12</sub> =          |  | pc/h                    | `                                   | ,                              |  |  |
|   | 2287                            | pc/h (Equatio                 | n 25-4 or 25-            |                              |   |  | •                       | #an 25 15 ar 2                      | T 1/\                          |  |  |
| or V <sub>av34</sub>                                  | 5)                              |                               |                          |                              | V <sub>3</sub> or V <sub>av34</sub>             |  |                         | tion 25-15 or 2                     | 0-10)                          |  |  |
| s $V_3$ or $V_{av34} > 2,70$                          | 00 pc/h?                        | s 🗹 No                        |                          |                              |   |  | n? ☐ Yes ☐              |                                     |                                |  |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5           | <sup>*</sup> V <sub>12</sub> /2 | s 🗹 No                        |                          |                              | Is V <sub>3</sub> or V <sub>av3</sub>           | <sub>34</sub> > 1.5 * V <sub>12</sub> /2 | 2  ☐ Yes  ☐             | No                                  |                                |  |  |
| Yes,V <sub>12a</sub> =                                |                                 | (Equation 25                  | -8)                      |                              | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |  |                         |                                     |                                |  |  |
| Capacity Che  |                                 | (- 100                        | -/                       |                              | Canacit   | y Checks                                 | :                       |                                     |                                |  |  |
| Japacity One  | Actual                          | C                             | pacity                   | LOS F?                       | Oupuch  | Act                                      |                         | Capacity                            | LOS F                          |  |  |
|   | Actual                          |                               | pacity                   | LUST:                        | \/  | ACI                                      |                         | 1 -                                 | 1031                           |  |  |
|   |                                 |                               |                          |                              | V <sub>F</sub>                                  |  | Exhibit                 |                                     |                                |  |  |
| $V_{FO}$  | 6306                            | Exhibit 25-7                  |                          | No                           | $V_{FO} = V_{F}$                                | - V <sub>R</sub>                         | Exhibit                 | 25-14                               |                                |  |  |
|   |                                 |                               |                          |                              | V <sub>R</sub>                                  |  | Exhibit                 | 25-3                                |                                |  |  |
| low Entering  | a Merae In                      | fluence A                     | rea                      |                              | Flow En   | terina Di                                | verae Infl              | uence Are                           |                                |  |  |
|   | Actual                          | T .                           | )esirable                | Violation?                   |   | Actual                                   |                         | Desirable                           | Violation?                     |  |  |
| V <sub>R12</sub>                                      | 4019                            | Exhibit 25-7                  | 4600:All                 | No                           | V <sub>12</sub>                                 |  | Exhibit 25-             |                                     |                                |  |  |
| evel of Serv  |                                 |                               |                          | I                            | <del>}</del>                                    | Service                                  |                         | ation (if n                         | ot F)                          |  |  |
|   |                                 |                               |                          |                              |   |  |                         | •                                   | <i>J(1)</i>                    |  |  |
| 10  |                                 | 0.0078 V <sub>12</sub> - 0.00 | JUZI LA                  |                              |   | 11                                       | + 0.0086 V <sub>1</sub> | <sub>2</sub> - 0.009 L <sub>D</sub> |                                |  |  |
| R = 31.1 (pc  |                                 |                               |                          |                              | $D_R = (pc/mi/ln)$                              |  |                         |                                     |                                |  |  |
| OS = D (Exhib<br>Speed Detern                         |                                 |                               |                          |                              |   | exhibit 25-4)<br>Exhibit 25-4)           |                         |                                     |                                |  |  |
|   |                                 |                               |                          |                              | _   |  | idon                    |                                     |                                |  |  |
| 1 <sub>S</sub> = 0.470 (Exi                           | bit 25-19)                      |                               |                          |                              | $D_s = $ (Exhibit 25-19)                        |  |                         |                                     |                                |  |  |
| S <sub>R</sub> = 49.4 mph (Exhibit 25-19)             |                                 |                               |                          |                              | S <sub>R</sub> = mp                             | oh (Exhibit 25                           | -19)                    |                                     |                                |  |  |
| S <sub>0</sub> = 49.6 mph (Exhibit 25-19)             |                                 |                               |                          |                              | S <sub>0</sub> = mp                             | oh (Exhibit 25                           | -19)                    |                                     |                                |  |  |
| $_{0}$ = 49.6 mph (                                   |                                 | S = 49.5 mph (Exhibit 25-14)  |                          |                              |   |  |                         |                                     |                                |  |  |
|   | -                               |                               |                          |                              | S = mr  | oh (Exhibit 25                           | -15)                    |                                     |                                |  |  |

|  |                                  | RAMP                                   | S AND RAM                   | IP JUNCTI   | ONS WO   | RKS                              | HEET                     |   |                     |                                    |  |
|--|----------------------------------|--|-----------------------------|---|--|----------------------------------|--------------------------|---|---------------------|------------------------------------|--|
| General Info   | rmation                          |  |                             | Site Infor  |  |                                  |                          |   |                     |                                    |  |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric | SEB<br>y CHA<br>02/19<br>od PM   |  | J                           | reeway/Dir of Tr<br>unction<br>urisdiction<br>Analysis Year | ravel r<br>E   | Exit 4 I                         |                          |   |                     |                                    |  |
| Project Description  | Exit 4                           |  |                             |   |  |                                  |                          |   |                     |                                    |  |
| Inputs   |                                  | Terrain: Leve                          | <u> </u>                    |   |  |                                  |                          |   |                     | A 1:                               |  |
| Upstream Adj Ram <sub> </sub> ☐ Yes ☐ O                              |                                  | Terrain. Leve                          | '                           |   |  |                                  |                          |   | Downstrea<br>Ramp   | am Adj                             |  |
|  |                                  |  |                             |   |  |                                  |                          |   | ✓ Yes               | ☑ On                               |  |
| ™ No □ O   | 111                              |  |                             |   |  |                                  |                          |   | □ No                | ☐ Off                              |  |
| L <sub>up</sub> = ft   |                                  |  |                             |   |  |                                  |                          |   | L <sub>down</sub> = | 1850 ft                            |  |
| V <sub>u</sub> = veh/  | h                                | S                                      | $_{FF}$ = 56.0 mph Sketch ( | ( show lanes, L <sub>A</sub>                                | $S_{FR} = 40.0 \text{ mph}$ $V_{E}$                      |                                  |                          |   |                     | 880 veh/h                          |  |
| Conversion   | to pc/h Und                      | der Base (                             | Conditions                  |   |  |                                  |                          |   |                     |                                    |  |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                                    | Terrain                     | %Truck  | %Rv  |                                  | f <sub>HV</sub>          | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 5400                             | 0.86                                   | Level                       | 2   | 0  | 0                                | .990                     | 1.00  | 63                  | 342                                |  |
| Ramp   | 960                              | 0.86                                   | Level                       | 2   | 0  | 0                                | .990                     | 1.00  | 11                  | 27                                 |  |
| UpStream<br>DownStream   | 000                              | 0.00                                   | Level                       | 1   |  | +                                | 005                      | 1.00  | 10                  | )OF                                |  |
| DownStream   | 880                              | 0.88<br>Merge Areas                    | Level                       | 1   | 0  | 0                                | .995                     | 1.00<br>Diverge Areas                               | 10                  | 005                                |  |
| Estimation o   |                                  | ivior go 7 ii cus                      |                             |   | Estimati   | on c                             |                          | biverge rireas                                      |                     |                                    |  |
|  | V <sub>12</sub> = V <sub>F</sub> | (D )                                   |                             |   | +  |                                  |                          | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | \D                  |                                    |  |
| <br>   |                                  | -                                      |                             |   | Equation 25-8  | ` ''                             |                          |   |                     |                                    |  |
| L <sub>EQ</sub> =<br>P =   |                                  | L <sub>EQ</sub> =<br>P <sub>FD</sub> = |                             |   | .550 using Eq  |                                  | sibit 2E 12)             |   |                     |                                    |  |
| P <sub>FM</sub> =<br>V <sub>12</sub> =                               | pc/h                             | Equation (E                            | .Allibit 25-5)              |   | V <sub>12</sub> =  |                                  |                          | 993 pc/h  | uation (Exi         | IIDIL 23-12)                       |  |
| V <sub>12</sub> =<br>V <sub>3</sub> or V <sub>av34</sub>             | •                                | (Equation 25                           | -4 or 25-5)                 |   | V <sub>12</sub> –<br>V <sub>3</sub> or V <sub>av34</sub> |                                  |                          | 993  pc/11<br>349  pc/h (Equ                        | ation 25 1          | 5 or 25 16                         |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                         |                                  |  | 7 4 01 23 3)                |   |  | . > 27                           |                          | Tyes ☑ No   | alion 25-1.         | 3 01 23-10                         |  |
| Is $V_3$ or $V_{av34} > 2,7$   |                                  |  |                             |   |  |                                  |                          | Yes ✓ No  |                     |                                    |  |
| If Yes,V <sub>12a</sub> =  | ·=                               | Equation 25                            | (-8)                        |   | If Yes, V <sub>12a</sub> =                               |                                  |                          | oc/h (Equation                                      | 25-18)              |                                    |  |
| Capacity Ch  |                                  | (=9000                                 |                             |   | Capacity   |                                  |                          |   |                     |                                    |  |
|  | Actual                           | С                                      | apacity                     | LOS F?  | 100,000,000,000  | <i></i>                          | Actual                   | Ca  | pacity              | LOS F                              |  |
|  |                                  |  | . ,                         |   | V <sub>F</sub>   |                                  | 6342                     | Exhibit 25-1  | 4 6780              | No                                 |  |
| $V_{FO}$   |                                  | Exhibit 25-7                           |                             |   | $V_{FO} = V_{F}$   | - V <sub>R</sub>                 | 5215                     | Exhibit 25-1  | 4 6780              | No                                 |  |
|  |                                  |  |                             |   | V <sub>R</sub>   |                                  | 1127                     | Exhibit 25-3  | 2100                | No                                 |  |
| Flow Enterin   | a Merae In                       | fluence Δ                              | rea                         | <u> </u>  | <del></del>  | terir                            |                          | rge Influen   |                     |                                    |  |
|  | Actual                           | ľ                                      | Desirable Desirable         | Violation?  |  | 1                                | Actual                   | Max Desirat   |                     | Violation                          |  |
| V <sub>R12</sub>   |                                  | Exhibit 25-7                           |                             |   | V <sub>12</sub>  |                                  | 3993                     | Exhibit 25-14                                       | 4400:All            | No                                 |  |
| Level of Ser   | vice Detern                      | nination (i                            | f not F)                    | •   |  | Ser                              | vice De                  | terminatio  | n (if not           | <del>.</del><br>F)                 |  |
| D <sub>R</sub> = 5.475 + 0   | 0.00734 v <sub>R</sub> +         | 0.0078 V <sub>12</sub> -               | 0.00627 L <sub>A</sub>      |   |  | O <sub>R</sub> = 4               | 1.252 + 0                | .0086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>  |                                    |  |
| D <sub>R</sub> = (pc/m   | i/ln)                            |  |                             |   | $D_R = 32$   | .4 (pc                           | /mi/ln)                  | · <del>-</del>                                      | _                   |                                    |  |
|  | oit 25-4)                        |  |                             |   | LOS = D  | (Exhi                            | bit 25-4)                |   |                     |                                    |  |
| Speed Deter  | mination                         |  |                             |   | Speed D  | eter                             | minatio                  | on  |                     |                                    |  |
| M <sub>S</sub> = (Exibit 2   |                                  |  |                             |   | D <sub>s</sub> = 0.4                                     | 164 (E                           | xhibit 25                | -19)  |                     |                                    |  |
| _  | hibit 25-19)                     |  |                             |   | S <sub>R</sub> = 49.5 mph (Exhibit 25-19)                |                                  |                          |   |                     |                                    |  |
|  |                                  |  |                             |   |  | $S_0$ = 56.2 mph (Exhibit 25-19) |                          |   |                     |                                    |  |
|  | hibit 25-19)                     |  |                             |   | $S_0 = 56$   | .z mpr                           | ı (Exnibit               | 25-19)  |                     |                                    |  |
| $S_0^=$ mph (Ex  | hibit 25-19)<br>hibit 25-14)     |  |                             |   |  |                                  | ı (Exnibit<br>ı (Exhibit |   |                     |                                    |  |

|   | RA               | MPS AND                       | KAMP JUN                | CHONS W                      | OKKSHE  | <u>-                                    </u> |                          |                                   |                                      |  |  |
|---|------------------|-------------------------------|-------------------------|------------------------------|---|--|--------------------------|-----------------------------------|--------------------------------------|--|--|
| General Infor   | mation           |                               |                         | Site Infor                   | mation  |  |                          |                                   |                                      |  |  |
| Analyst<br>Agency or Company                          | SEB<br>CHA       |                               |                         | eeway/Dir of Tra             |   | Northbound I-8<br>Exit 4 NB On-F             |                          |                                   |                                      |  |  |
| ate Performed   | 02/1!            |                               |                         | risdiction                   |   | NYSDOT                                       | tump                     |                                   |                                      |  |  |
| nalysis Time Period                                   |                  |                               | An                      | nalysis Year                 |   | 2016 Diamond                                 |                          |                                   |                                      |  |  |
| roject Description                                    | Exit 4           |                               |                         | •                            |   |  |                          |                                   |                                      |  |  |
| nputs   |                  |                               |                         |                              |   |  |                          |                                   |                                      |  |  |
| pstream Adj Ramp                                      |                  | Terrain: Level                |                         |                              |   |  |                          | Downstre<br>Ramp                  | eam Adj                              |  |  |
| Yes On  | 1                |                               |                         |                              |   |  |                          | ☐ Yes                             | ☐ On                                 |  |  |
| No ✓ Off  | f                |                               |                         |                              |   |  |                          | ✓ No                              | ☐ Off                                |  |  |
| up = 1850   | ft               |                               |                         |                              |   |  |                          | L <sub>down</sub> =               | ft                                   |  |  |
|   | 1.0              | S                             | <sub>F</sub> = 56.0 mph |                              | $S_{FR} = 4$  | 0.0 mph                                      |                          | V <sub>D</sub> =                  | veh/h                                |  |  |
| u = 960  ve   |                  |                               |                         | show lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$   |  |                          | V D -                             | VGII/II                              |  |  |
| Conversion to   | o pc/h Und       | der Base C                    | Conditions              |                              |   |  |                          |                                   |                                      |  |  |
| (pc/h)  | V<br>(Veh/hr)    | PHF                           | Terrain                 | %Truck                       | %Rv   | f <sub>HV</sub>                              | f <sub>p</sub>           | v = V/PH                          | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| reeway  | 4450             | 0.86                          | Level                   | 2                            | 0   | 0.990  | 1.00                     |                                   | 5226                                 |  |  |
| Ramp  | 880              | 0.88                          | Level                   | 1                            | 0   | 0.995  | 1.00                     |                                   | 1005                                 |  |  |
| JpStream  | 960              | 0.92                          | Level                   | 3                            | 0   | 0.985  | 1.00                     | 1059                              |                                      |  |  |
| DownStream  |                  |                               |                         | ]                            |   |  |                          |                                   |                                      |  |  |
|   |                  | Merge Areas                   |                         |                              | Catina ati  |  | Diverge Are              | eas                               |                                      |  |  |
| stimation of  | 12               |                               |                         |                              | Estimati  | ion of v <sub>12</sub>                       |                          |                                   |                                      |  |  |
|   | $V_{12} = V_{F}$ | (P <sub>FM</sub> )            |                         |                              |   | V <sub>12</sub>                              | $= V_R + (V_F)$          | - V <sub>P</sub> )P <sub>ED</sub> |                                      |  |  |
| L <sub>EQ</sub> = 1604.87 (Equation 25-2 or 25-3)     |                  |                               |                         |                              |   | 12   |                          | 25-8 or 25-                       | 9)                                   |  |  |
| P <sub>FM</sub> = 0.614 using Equation (Exhibit 25-5) |                  |                               |                         |                              | L <sub>EQ</sub> =<br>P <sub>FD</sub> =  |  |                          | uation (Exhibit                   |                                      |  |  |
| 12 =  | 3210             | pc/h                          |                         |                              | V <sub>12</sub> =   |  | pc/h                     | (=11111                           | ,                                    |  |  |
| <sub>3</sub> or V <sub>av34</sub>                     | 2016             | pc/h (Equatio                 | n 25-4 or 25-           |                              | V <sub>3</sub> or V <sub>av34</sub>   |  | •                        | tion 25-15 or 2                   | 5-16)                                |  |  |
|   | 5)               | _                             |                         |                              |   | > 2.700 nc/h                                 | ? TYes                   |                                   | 5 10)                                |  |  |
| s $V_3$ or $V_{av34} > 2,70$                          |                  |                               |                         |                              |   |  |                          |                                   |                                      |  |  |
| s $V_3$ or $V_{av34} > 1.5$                           |                  |                               |                         |                              | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No<br>If Yes, $V_{12a} =$ pc/h (Equation 25-18) |  |                          |                                   |                                      |  |  |
| Yes,V <sub>12a</sub> =                                |                  | (Equation 25-                 | ·8)                     |                              | 120   |  |                          |                                   |                                      |  |  |
| Capacity Che  | cks              |                               |                         |                              | Capacity  | y Checks                                     |                          |                                   |                                      |  |  |
|   | Actual           | Ca                            | pacity                  | LOS F?                       |   | Actu   |                          | Capacity                          | LOS F                                |  |  |
|   |                  |                               |                         |                              | V <sub>F</sub>  |  | Exhibit                  | 25-14                             |                                      |  |  |
| $V_{FO}$  | 6231             | Exhibit 25-7                  |                         | No                           | $V_{FO} = V_{F}$  | - V <sub>R</sub>                             | Exhibit                  | 25-14                             |                                      |  |  |
|   |                  |                               |                         |                              | V <sub>R</sub>  |  | Exhibit                  | 25-3                              |                                      |  |  |
| low Entering  | a Merae In       | fluence A                     | rea                     |                              | -   | terina Di                                    | verge Infl               | uence Are                         | <u>'</u><br>ea                       |  |  |
|   | Actual           | 1                             | )esirable               | Violation?                   |   | Actual                                       |                          | Desirable                         | Violation?                           |  |  |
| V <sub>R12</sub>                                      | 4215             | Exhibit 25-7                  | 4600:All                | No                           | V <sub>12</sub>   |  | Exhibit 25-              |                                   |                                      |  |  |
| evel of Serv  | ice Deterr       | nination (i                   | not F)                  |                              | <del>}</del>  | Service                                      | <br>Determina            |                                   | ot F)                                |  |  |
|   |                  | 0.0078 V <sub>12</sub> - 0.00 |                         |                              | 1   |  | + 0.0086 V <sub>12</sub> |                                   |                                      |  |  |
| <sub>R</sub> = 29.7 (pc                               | 10               | IZ                            | М                       |                              |   | c/mi/ln)                                     | 12                       | . D                               |                                      |  |  |
| OS = D (Exhib   |                  |                               |                         |                              |   | xhibit 25-4)                                 |                          |                                   |                                      |  |  |
| Speed Detern  | <u> </u>         |                               |                         |                              | `   | etermina                                     | tion                     |                                   |                                      |  |  |
| •   |                  |                               |                         |                              | _   | xhibit 25-19)                                | uon.                     |                                   |                                      |  |  |
| 1 <sub>S</sub> = 0.480 (Exil                          |                  |                               |                         |                              | 3   |  | 10)                      |                                   |                                      |  |  |
| S <sub>R</sub> = 49.3 mph (Exhibit 25-19)             |                  |                               |                         |                              |   | oh (Exhibit 25-                              |                          |                                   |                                      |  |  |
|   | (Fubibit OF 10)  |                               |                         |                              | S <sub>0</sub> = mph (Exhibit 25-19)  |  |                          |                                   |                                      |  |  |
| <sub>0</sub> = 50.5 mph (                             | (Exhibit 25-14)  |                               |                         |                              |   | oh (Exhibit 25-                              |                          |                                   |                                      |  |  |

|  |                |                          | S AND RAN                |  |                                       |   |           |   |                             |                |  |
|--|----------------|--------------------------|--------------------------|--|---------------------------------------|---|-----------|---|-----------------------------|----------------|--|
| General Infor  | mation         |                          |                          | Site Infor   |                                       |   |           |   |                             |                |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioc               | 02/15          | 5/12                     | J                        | reeway/Dir of Tra<br>lunction<br>lurisdiction<br>Analysis Year |                                       | Northbo<br>Exit 5 N<br>NYSDO<br>2016 Di | T         |   |                             |                |  |
| Project Description  | Exit 4         |                          |                          |  |                                       |   |           |   |                             |                |  |
| Inputs   |                |                          |                          |  |                                       |   |           |   |                             |                |  |
| Upstream Adj Ramp  |                | Terrain: Level           |                          |  |                                       |   |           |   | Downstrea<br>Ramp           | m Adj          |  |
| ▼ Yes ▼ Or   |                |                          |                          |  |                                       |   |           |   | ☐ Yes                       | □ On           |  |
| □ No □ Of  | f              |                          |                          |  |                                       |   |           |   | ✓ No                        | ☐ Off          |  |
| L <sub>up</sub> = 7810   | ft             |                          | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 3                   | 15 0 mnl                                | <u> </u>  |   | L <sub>down</sub> =         | ft             |  |
| $V_u = 880 \text{ ve}$   |                |                          | Sketch (                 | ( show lanes, L <sub>A</sub> ,                                 |                                       |   |           |   |                             | veh/h          |  |
| Conversion to  |                | der Base (               | Conditions               |  | 1                                     |   |           |   |                             |                |  |
| (pc/h)   | V<br>(Veh/hr)  | PHF                      | Terrain                  | %Truck   | %Rv                                   | 1                                       | HV        | f <sub>p</sub>                                      | v = V/PHF x f <sub>HV</sub> |                |  |
| Freeway  | 5650           | 0.86                     | Level                    | 2  | 0                                     | _                                       | 990       | 1.00  | 663                         |                |  |
| Ramp   | 410            | 0.92                     | Level                    | 3  | 0                                     | _                                       | 985       | 1.00  | 45                          |                |  |
| UpStream<br>DownStream   | 880            | 0.88                     | Level                    | 1  | 0                                     | 0.9                                     | 995       | 1.00  | 100                         | )5             |  |
| Downstieam   |                | Merge Areas              |                          |  |                                       |   |           | Diverge Areas                                       |                             |                |  |
| Estimation of  |                | worge 7 trous            |                          |  | Estimati                              | ion o                                   |           | 51vorgo 7 trous                                     |                             |                |  |
|  |                | (D )                     |                          |  |                                       |   |           | \/ . (\/ \/   | \D                          |                |  |
| 1  | $V_{12} = V_F$ |                          | 25.2)                    |  |                                       |   |           | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> |                             | 05.0)          |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)  |                |                          |                          |  | L <sub>EQ</sub> =                     |   |           | 310.35 (Equati                                      |                             |                |  |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)                                      |                |                          |                          |  | P <sub>FD</sub> =                     |   |           | 573 using Eq  | uation (Exni                | DIT 25-12)     |  |
| V <sub>12</sub> =  | pc/h           | (Cauchian OF             | 1 or 05 5)               |  | V <sub>12</sub> =                     |   |           | 997 pc/h  | 05.45                       | 05.40          |  |
| V <sub>3</sub> or V <sub>av34</sub><br>Is V <sub>3</sub> or V <sub>av34</sub> > 2,70 |                | (Equation 25             | -4 Of Z5-5)              |  | V <sub>3</sub> or V <sub>av34</sub>   | . 27                                    |           | 638 pc/h (Equ                                       | ation 25-15                 | or 25-16       |  |
| 0 4101   |                |                          |                          |  |                                       |   |           | Yes ✓ No  |                             |                |  |
| Is $V_3$ or $V_{av34} > 1.5$   | · <del>-</del> |                          | 0/                       |  |                                       |   |           | Yes No  | OF 40\                      |                |  |
| If Yes,V <sub>12a</sub> =  |                | (Equation 25             | -8)                      |  | If Yes,V <sub>12a</sub> =             |   |           | oc/h (Equation                                      | 25-18)                      |                |  |
| Capacity Che   | 1              | 1 0                      | 11                       | LOS F?   | Capacity                              | y Che                                   |           | 1 0   | 11                          | LOS F          |  |
|  | Actual         |                          | apacity                  | LUS F?   | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | -                                       | Actual    | <del></del>   | pacity                      |                |  |
| , , , , , , , , , , , , , , , , , , ,  |                |                          |                          |  | V <sub>F</sub>                        | <del>,  </del>                          | 6635      | Exhibit 25-1  | +                           | No             |  |
| $V_{FO}$   |                | Exhibit 25-7             |                          |  | $V_{FO} = V_{F}$                      | - V <sub>R</sub>                        | 6183      | Exhibit 25-1  | _                           | No             |  |
|  |                |                          |                          |  | V <sub>R</sub>                        |   | 452       | Exhibit 25-3  | 2000                        | No             |  |
| Flow Entering  | g Merge In     | 1                        |                          |  | Flow En                               | _                                       |           | rge Influen   |                             |                |  |
| .,   | Actual         | 1                        | Desirable                | Violation?   | ļ                                     |   | ctual     | Max Desirat   |                             | Violation      |  |
| V <sub>R12</sub>   | <u> </u>       | Exhibit 25-7             |                          |  | V <sub>12</sub>                       |   | 997       | Exhibit 25-14                                       | 4400:All                    | No             |  |
| Level of Serv  |                | •                        |                          |  | 1                                     |   |           | terminatio  | _                           | <del>-</del> ) |  |
| $D_R = 5.475 + 0.$   |                | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |  |                                       | $D_R = 4$                               | .252 + 0  | .0086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>          |                |  |
| D <sub>R</sub> = (pc/mi/   | ln)            |                          |                          |  | l ''                                  | o.4 (pc/                                | •         |   |                             |                |  |
| LOS = (Exhibi  |                |                          |                          |  |                                       | •                                       | it 25-4)  |   |                             |                |  |
| Speed Detern   | nination       |                          |                          |  | Speed D                               | Deteri                                  | minatio   | on  |                             |                |  |
| M <sub>S</sub> = (Exibit 2   | <br>5-19)      |                          |                          |  | $D_S = 0.4$                           | 469 (Ex                                 | chibit 25 | -19)  | <del></del>                 |                |  |
| o .  | ibit 25-19)    |                          |                          |  | S <sub>R</sub> = 49                   | .4 mph                                  | (Exhibit  | 25-19)  |                             |                |  |
|  |                |                          |                          |  | $S_0 = 55$                            | i.0 mph                                 | (Exhibit  | 25-19)  |                             |                |  |
| 'S <sub>0</sub> = mph (Exh   | 1011 20 10)    |                          |                          |  | S = 51.5 mph (Exhibit 25-15)          |   |           |   |                             |                |  |
|  | ibit 25-14)    |                          |                          |  | S = 51                                | .5 mnh                                  | (Exhibit  | 25-15)  |                             |                |  |

|  |                                  | IVAIVII V                | S AND RAM                |   |   | 1110                                 |                 |                             |                     |                                    |  |
|--|----------------------------------|--------------------------|--------------------------|---|---|--------------------------------------|-----------------|-----------------------------|---------------------|------------------------------------|--|
| General Info   | rmation                          |                          |                          | Site Infor  | mation  |                                      |                 |                             |                     |                                    |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio                        | 02/1!                            |                          | J                        | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year | <u> </u>  | Southb<br>Exit 2W<br>NYSDC<br>2016 D | / Off           |                             |                     |                                    |  |
| Project Description  | Exit 4                           |                          |                          |   |   |                                      |                 |                             |                     |                                    |  |
| Inputs   |                                  |                          |                          |   |   |                                      |                 |                             |                     |                                    |  |
| Upstream Adj Ramp  |                                  | Terrain: Leve            |                          |   |   |                                      |                 |                             | Downstrea<br>Ramp   | m Adj                              |  |
| ☐ Yes ☐ O  |                                  |                          |                          |   |   |                                      |                 |                             | ✓ Yes               | ✓ On                               |  |
| ✓ No ☐ Of  | ff                               |                          |                          |   |   |                                      |                 |                             | □ No                | ☐ Off                              |  |
| L <sub>up</sub> = ft   |                                  | 5                        | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4                                 | 0 0 mn                               | h               |                             | L <sub>down</sub> = | 1300 ft                            |  |
| V <sub>u</sub> = veh/ł   |                                  |                          | Sketch (                 | show lanes, L <sub>A</sub>                                  |   |                                      |                 |                             |                     | 680 veh/h                          |  |
| Conversion t   | o pc/h Un                        | der Base (               | Conditions               |   |   |                                      |                 |                             |                     |                                    |  |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                      | Terrain                  | %Truck  | %Rv   | <u> </u>                             | f <sub>HV</sub> | f <sub>p</sub>              | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 3850                             | 0.92                     | Level                    | 2   | 0   | 0.                                   | 990             | 1.00                        | 422                 |                                    |  |
| Ramp   | 540                              | 0.92                     | Level                    | 2   | 0   | 0.                                   | 990             | 1.00                        | 593                 |                                    |  |
| UpStream<br>DownStream   | 400                              | 0.02                     | Lovel                    | 1 2   | 0   |                                      | 000             | 1.00                        | 7.4                 | 7                                  |  |
| Downstieam   | 680                              | 0.92<br>Merge Areas      | Level                    | 2   | U   | 0.                                   | 990             | 1.00<br>Diverge Areas       | 74                  | /                                  |  |
| Estimation o   |                                  | werge rireas             |                          |   | Estimati  | on o                                 |                 | biverge rireds              |                     |                                    |  |
|  | V <sub>12</sub> = V <sub>F</sub> | (D )                     |                          |   | 1   |                                      |                 | - \/ - \/ \/                | \D                  |                                    |  |
| h  |                                  |                          |                          |   | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> |                                      |                 |                             |                     |                                    |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)<br>P <sub>FM</sub> = using Equation (Exhibit 25-5) |                                  |                          |                          |   | L <sub>EQ</sub> =<br>P <sub>FD</sub> =              |                                      |                 | Equation 25-8               |                     | L# 2E 12)                          |  |
| - ·  |                                  |                          |                          |   |   |                                      |                 | .627 using Ed               | luation (Exn        | DII 25-12)                         |  |
| V <sub>12</sub> =  | pc/h                             | /Equation 25             | 4 or 25 5)               |   | V <sub>12</sub> =                                   |                                      |                 | 872 pc/h                    | OF 45               | 05 40                              |  |
| V <sub>3</sub> or V <sub>av34</sub><br>Is V <sub>3</sub> or V <sub>av34</sub> > 2,70         |                                  | (Equation 25             | -4 Of 25-5)              |   | V <sub>3</sub> or V <sub>av34</sub>                 | . 27                                 |                 | 355 <b>pc/h (Equ</b>        | ation 25-15         | or 25-16                           |  |
| Is $V_3$ or $V_{av34} > 2.70$<br>Is $V_3$ or $V_{av34} > 1.5$                                |                                  |                          |                          |   |   |                                      |                 | Yes ✓ No                    |                     |                                    |  |
|  | · <del>-</del>                   |                          | 0/                       |   |   |                                      |                 | Yes No                      | OF 10)              |                                    |  |
| If Yes,V <sub>12a</sub> =  |                                  | (Equation 25             | -8)                      |   | If Yes,V <sub>12a</sub> =                           |                                      |                 | oc/h (Equation              | 125-18)             |                                    |  |
| Capacity Che   | 1                                | 1 0                      |                          | LOS F?  | Capacity Checks                                     |                                      |                 |                             |                     |                                    |  |
|  | Actual                           |                          | apacity                  | LUS F?  | \ \ \\  | $\dashv$                             | Actual          | Exhibit 25-1                | pacity<br>4 6780    | LOS F                              |  |
|  |                                  | E 1 11 11 0 E 7          |                          |   | V <sub>F</sub>                                      | \ <u></u>                            | 4227            |                             |                     | No                                 |  |
| $V_{FO}$   |                                  | Exhibit 25-7             |                          |   | $V_{FO} = V_{F}$                                    | - v <sub>R</sub>                     | 3634            | Exhibit 25-1                | <del>-</del>        | No                                 |  |
|  |                                  |                          |                          |   | V <sub>R</sub>                                      |                                      | 593             | Exhibit 25-3                |                     | No                                 |  |
| Flow Enterin   | 1                                | 1                        |                          | T   | Flow Entering Diverge Influence Area                |                                      |                 |                             |                     |                                    |  |
|  | Actual                           | _                        | Desirable                | Violation?  | .,  |                                      | Actual          | Max Desiral                 |                     | Violation                          |  |
| V <sub>R12</sub>   | 1 2 1                            | Exhibit 25-7             |                          |   | V <sub>12</sub>                                     |                                      | 2872            | Exhibit 25-14               | 4400:All            | No                                 |  |
| Level of Serv  |                                  |                          |                          |   |   |                                      |                 | terminatio                  |                     | -)                                 |  |
| $D_R = 5.475 + 0$  | .,                               | u.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |   |   |                                      |                 | 0.0086 V <sub>12</sub> - 0. | 009 L <sub>D</sub>  |                                    |  |
| D <sub>R</sub> = (pc/mi  |                                  |                          |                          |   | I ''  |                                      | /mi/ln)         |                             |                     |                                    |  |
| •  | it 25-4)                         |                          |                          |   |   | •                                    | oit 25-4)       |                             |                     |                                    |  |
| Speed Deteri   | mination                         |                          |                          |   | Speed D   |                                      |                 |                             |                     |                                    |  |
| M <sub>S</sub> = (Exibit 2   | 5-19)                            |                          |                          |   |   | •                                    | xhibit 25       | ,                           |                     |                                    |  |
| S <sub>R</sub> = mph (Ext  | nibit 25-19)                     |                          |                          |   |   | -                                    | (Exhibit        |                             |                     |                                    |  |
| I_   | :h:+ 0F 40\                      |                          |                          |   | $S_0 = 60.0 \text{ mph (Exhibit 25-19)}$            |                                      |                 |                             |                     |                                    |  |
| S <sub>0</sub> = mph (Ext  | nibit 25-19)                     |                          |                          |   | -0 00   | .o mpi                               | (LXIIIDIL       | 20 10)                      |                     |                                    |  |

|   |   |                                  | RAMP               | S AND RAM                  | IP JUNCTI  | ONS WO  | RKS              | HEET                                  |   |                     |                                    |  |
|---|---|----------------------------------|--------------------|----------------------------|--|---|------------------|---------------------------------------|---|---------------------|------------------------------------|--|
| Genera  | l Infori  | nation                           |                    | <u> </u>                   | Site Infor   |   |                  |                                       |   |                     |                                    |  |
| Analyst<br>Agency or (<br>Date Perfor<br>Analysis Tir | Company<br>med<br>me Period   | SEB<br>CHA<br>02/15<br>PM        | 5/12               | Ju<br>Ju                   | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | avel  | Exit 4 :<br>NYSD | oound I-87<br>SB Off<br>OT<br>Diamond |   |                     |                                    |  |
| Project Des<br><b>Inputs</b>                          | scription   | EXIT 4                           |                    |                            |  |   |                  |                                       |   |                     |                                    |  |
| Upstream A  | ldi Damn  |                                  | Terrain: Leve      | <br>el                     |  |   |                  |                                       |   | Downstrea           | ım Adi                             |  |
| Yes   |   |                                  |                    |                            |  |   |                  |                                       |   | Ramp                | •                                  |  |
| ✓ No  | □ Off   |                                  |                    |                            |  |   |                  |                                       |   | ✓ Yes               | ☑ On                               |  |
| 140   |   |                                  |                    |                            |  |   |                  |                                       |   | □ No                | Off                                |  |
| L <sub>up</sub> =                                     | ft  |                                  | S                  | S <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4                             | 0.0 mj           | oh                                    |   | L <sub>down</sub> = | 1820 ft                            |  |
| V <sub>u</sub> =                                      | veh/h   |                                  |                    | Sketch (                   | show lanes, L <sub>A</sub>                                 | $L_{D'}V_{R'}V_{f}$                             |                  |                                       |   | V <sub>D</sub> =    | 1280 veh/l                         |  |
| Conver  | sion to   | pc/h Und                         | der Base           | Conditions                 |  |   |                  |                                       |   |                     |                                    |  |
| (pc/  | /h)   | V<br>(Veh/hr)                    | PHF                | Terrain                    | %Truck   | %Rv   |                  | $f_{HV}$                              | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway   |   | 3650                             | 0.92               | Level                      | 2  | 0   | 0                | .990                                  | 1.00  | 40                  | 07                                 |  |
| Ramp  |   | 970                              | 0.92               | Level                      | 2  | 0   | 0                | .990                                  | 1.00  | 1065                |                                    |  |
| UpStream<br>DownStrea                                 | am  | 1280                             | 0.93               | Level                      | 4  | 0   |                  | .980                                  | 1.00  | 14                  | 04                                 |  |
| 2011101101  |   |                                  | Merge Areas        | Lovei                      |  |   |                  |                                       | Diverge Areas                                       |                     | 0-1                                |  |
| Estimat   | tion of   | v <sub>12</sub>                  |                    |                            |  | Estimati  | ion d            | of v <sub>12</sub>                    |   |                     |                                    |  |
|   |   | V <sub>12</sub> = V <sub>F</sub> | (P <sub>EM</sub> ) |                            |  |   |                  | V <sub>12</sub> =                     | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | P <sub>ED</sub>     |                                    |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)             |   |                                  |                    |                            |  | L <sub>FO</sub> =                               |                  |                                       | Equation 25-8                                       | `                   |                                    |  |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)       |   |                                  |                    |                            |  | P <sub>FD</sub> =                               |                  | 0                                     | 611 using Eq  | uation (Ext         | nibit 25-12)                       |  |
| V <sub>12</sub> =                                     |   | pc/h                             |                    |                            |  | V <sub>12</sub> =                               |                  | 2                                     | 862 pc/h  |                     |                                    |  |
| V <sub>3</sub> or V <sub>av34</sub>                   |   | pc/h (                           | Equation 25        | 5-4 or 25-5)               |  | $V_3$ or $V_{av34}$                             |                  | 1                                     | 145 pc/h (Equ                                       | ation 25-1          | 5 or 25-16)                        |  |
| Is V <sub>3</sub> or V <sub>av</sub>                  | <sub>v34</sub> > 2,700  | pc/h? 🔲 Yes                      | s 🗆 No             |                            |  | Is V <sub>3</sub> or V <sub>av3</sub>           | 34 > 2,          | 700 pc/h?                             | Tyes   ✓ No   |                     |                                    |  |
|   |   | $V_{12}/2  \square  Yes$         |                    |                            |  |   |                  |                                       | Yes Vo  |                     |                                    |  |
| If Yes,V <sub>12a</sub>                               |   |                                  | Equation 25        | 5-8)                       |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |                  |                                       |   |                     |                                    |  |
| Capacit   | ty Che  | cks                              |                    |                            | •  | Capacity Checks                                 |                  |                                       |   |                     |                                    |  |
|   |   | Actual                           | C                  | Capacity                   | LOS F?   | ļ ,,  |                  | Actual                                | <u> </u>  | pacity              | LOS F?                             |  |
| .,  |   |                                  |                    |                            |  | V <sub>F</sub>                                  | .,               | 4007                                  | Exhibit 25-1  |                     | No                                 |  |
| V <sub>F</sub>  | o   |                                  | Exhibit 25-7       |                            |  | $V_{FO} = V_{F}$                                | - V <sub>R</sub> | 2942                                  | Exhibit 25-1  | _                   | No                                 |  |
|   |   |                                  |                    |                            |  | V <sub>R</sub>                                  |                  | 1065                                  | Exhibit 25-3  |                     | No                                 |  |
| Flow E  | ntering   | Merge In                         | 1                  |                            | l Walata 2   | Flow En   | ı                |                                       | rge Influen   |                     | l Walatiano                        |  |
| V   |   | Actual                           | Exhibit 25-7       | Desirable                  | Violation?   | V <sub>12</sub>                                 | _                | Actual<br>2862                        | Max Desirat<br>Exhibit 25-14                        | 4400:All            | Violation?<br>No                   |  |
|   | $V_{R12}$   Exhibit 25-7   $V_{12}$   2862   Exhibit 25<br>Level of Service Determination (if not F)   Level of Service Determination |                                  |                    |                            |  |   |                  |                                       |   |                     |                                    |  |
|   |   |                                  |                    | - 0.00627 L <sub>A</sub>   |  |   |                  |                                       | .0086 V <sub>12</sub> - 0.                          | -                   | ' /                                |  |
| D <sub>R</sub> = 0.1                                  | (pc/mi/li   |                                  | 12                 | 0.00027                    |  |   | 1.               | :/mi/ln)                              | 12 0.   | 000 <b>-</b> D      |                                    |  |
| LOS =   | (Exhibit  | 25-4)                            |                    |                            |  | LOS = C   | (Exhi            | bit 25-4)                             |   |                     |                                    |  |
| Speed I   | Determ  | ination                          |                    |                            |  | Speed L   | Deter            | minatio                               | on  |                     |                                    |  |
| M <sub>S</sub> = (I                                   | Exibit 25   | -19)                             |                    |                            |  | D <sub>S</sub> = 0.4                            | 459 (E           | xhibit 25                             | -19)  |                     |                                    |  |
| _   |   | bit 25-19)                       |                    |                            |  | S <sub>R</sub> = 49.6 mph (Exhibit 25-19)       |                  |                                       |   |                     |                                    |  |
|   | nph (Exhi   | bit 25-19)                       |                    |                            |  | $S_0 = 60.9 \text{ mph (Exhibit 25-19)}$        |                  |                                       |   |                     |                                    |  |
| S = m   | nph (Exhi   | bit 25-14)                       |                    |                            |  | S = 52.4 mph (Exhibit 25-15)                    |                  |                                       |   |                     |                                    |  |
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|  |  | MPS AND                       | RAMP JUN             |  |   | <u> </u>   |                                      |                        |                                      |  |
|--|--|-------------------------------|----------------------|--|---|--|--------------------------------------|------------------------|--------------------------------------|--|
| General Infor  | mation                                       |                               |                      | Site Infor   | mation  |  |                                      |                        |                                      |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | SEB<br>CHA<br>02/15<br>PM                    |                               | Jı<br>Jı             | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year |   | Southbound I-8<br>Exit 4 SB On-R<br>NYSDOT<br>2016 Diamond |                                      |                        |                                      |  |
| Project Description  |  |                               |                      | naiysis i cai  |   | 2010 Diamonu   |                                      |                        |                                      |  |
| Inputs   | LAILT  |                               |                      |  |   |  |                                      |                        |                                      |  |
| Jpstream Adj Ramp  |  | Terrain: Level                |                      |  |   |  |                                      | Downstre               | eam Adi                              |  |
| ✓ Yes ☐ On   | l  |                               |                      |  |   |  |                                      | Ramp                   |                                      |  |
| □ No     Off   | :  |                               |                      |  |   |  | ☐ Yes<br>☑ No                        | ☐ On<br>☐ Off          |                                      |  |
| - <sub>up</sub> = 1820 1   | ft   |                               |                      |  |   |  |                                      | L <sub>down</sub> =    | ft                                   |  |
| $J_{up} = 1820 \text{ f}$ $J_{u} = 970 \text{ v}$                      |  | S                             | F = 56.0 mph         | show lanes, L <sub>A</sub> ,                               | S <sub>FR</sub> = 4                             | 0.0 mph  |                                      | V <sub>D</sub> =       | veh/h                                |  |
| Conversion to  |  | dor Basa C                    |                      | Show lanes, L <sub>A</sub>                                 | D' R' f   |  |                                      |                        |                                      |  |
|  | <i>γ</i> γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ |                               |                      | 1  |   | 1 .  | Ι.                                   | 1,775.                 |                                      |  |
| (pc/h)   | (Veh/hr)                                     | PHF                           | Terrain              | %Truck   | %Rv   | f <sub>HV</sub>  | f <sub>p</sub>                       | v = V/PH               | F x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 2700   | 0.92                          | Level                | 2  | 0   | 0.990  | 1.00                                 |                        | 2964                                 |  |
| Ramp   | 1280   | 0.93                          | Level                | 4  | 0   | 0.980  | 1.00                                 |                        | 1404                                 |  |
| UpStream   | 970  | 0.92                          | Level                | 2  | 0   | 0.990  | 1.00                                 |                        | 1065                                 |  |
| DownStream   |  | Morgo Aroas                   |                      |  |   |  | Divorgo Aro                          | 200                    |                                      |  |
| Estimation of  |  | Merge Areas                   |                      |  | Fstimat   | ion of v <sub>12</sub>                                     | Diverge Area                         | as                     |                                      |  |
|  |  | (D.)                          |                      |  | Loamac  | 1011 01 112  |                                      |                        |                                      |  |
| $V_{12} = V_F (P_{FM})$  |  |                               |                      |  |   | V <sub>12</sub>  | = V <sub>R</sub> + (V <sub>F</sub> - | $V_R)P_{FD}$           |                                      |  |
| L <sub>EQ</sub> = 1203.97 (Equation 25-2 or 25-3)                      |  |                               |                      |  | L <sub>EQ</sub> =                               |  | (Equation                            | 25-8 or 25-            | 9)                                   |  |
| $P_{\text{FM}} = 0.614$ using Equation (Exhibit 25-5)                  |  |                               |                      |  |   |  | using Equ                            | ation (Exhibi          | t 25-12)                             |  |
| / <sub>12</sub> =  | 1820   | •                             |                      |  | V <sub>12</sub> =                               |  | pc/h                                 |                        |                                      |  |
| <sub>3</sub> or V <sub>av34</sub>                                      | 1144 <sub> </sub><br>5)                      | pc/h (Equatio                 | n 25-4 or 25-        |  | $V_3$ or $V_{av34}$                             |  | pc/h (Equati                         | on 25-15 or 2          | 5-16)                                |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,70                          | ,  | s 🔽 No                        |                      |  | Is V <sub>3</sub> or V <sub>av3</sub>           | 34 > 2,700 pc/h  | Yes □                                | No                     |                                      |  |
| ls V <sub>3</sub> or V <sub>av34</sub> > 1.5 *                         |  |                               |                      |  | Is V <sub>3</sub> or V <sub>av3</sub>           | <sub>34</sub> > 1.5 * V <sub>12</sub> /2                   | □ Yes □                              | No                     |                                      |  |
| Yes,V <sub>12a</sub> =   |  | (Equation 25                  | .8)                  |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |  |                                      |                        |                                      |  |
| Capacity Che   | ·  | (Equation 20                  | <u> </u>             |  | Canacit   | y Checks   |                                      |                        |                                      |  |
| supuoity One   | Actual                                       | Ca                            | pacity               | LOS F?   | Joapaon   | Actu   | al I                                 | Capacity               | LOS F                                |  |
|  | Actual                                       |                               | pacity               | 2001.  | V <sub>F</sub>                                  | ricia  | Exhibit 2                            |                        | 2001                                 |  |
| $V_{FO}$   | 4368   | Exhibit 25-7                  |                      | No   | $V_{FO} = V_{F}$                                | - \/   | Exhibit 2                            |                        | _                                    |  |
| *FO  | 4500   | LATIIDIL 23-7                 |                      | INO  |   | * R  | _                                    |                        | _                                    |  |
|  | <u> </u>                                     | <u> </u>                      |                      |  | V <sub>R</sub>                                  |  | Exhibit :                            |                        |                                      |  |
| Flow Entering  |  |                               |                      | \/ioloti0  | Flow En   | tering Div   |                                      |                        | _                                    |  |
| V  | Actual<br>3224                               | Exhibit 25-7                  | esirable<br>4600:AII | Violation?   | \/  | Actual   | Exhibit 25-1                         | esirable               | Violation?                           |  |
| V <sub>R12</sub>   |  |                               | 4600:All             | No   | V <sub>12</sub>                                 | Comics 5   |                                      |                        | 1<br>of <i>E</i> '                   |  |
| Level of Servi   |  |                               |                      |  |   | Service L  |                                      |                        | ot F)                                |  |
| ••   |  | 0.0078 V <sub>12</sub> - 0.00 | 7627 L <sub>A</sub>  |  |   | D <sub>R</sub> = 4.252 +                                   | 0.0086 V <sub>12</sub>               | - 0.009 L <sub>D</sub> |                                      |  |
| $O_{R} = 21.8 \text{ (pc)}$  | •  |                               |                      |  |   | c/mi/ln)   |                                      |                        |                                      |  |
| OS = C (Exhib  | <del>-</del>                                 |                               |                      |  |   | xhibit 25-4)   |                                      |                        |                                      |  |
| Speed Detern   | nination                                     |                               |                      |  | <del> </del>                                    | Determina  | tion                                 |                        |                                      |  |
| specu zetem  | oit 25-19)                                   |                               |                      |  | 3   | xhibit 25-19)  |                                      |                        |                                      |  |
|  | •  |                               |                      |  | S <sub>R</sub> = mph (Exhibit 25-19)            |  |                                      |                        |                                      |  |
| M <sub>S</sub> = 0.315 (Exit   | Exhibit 25-19)                               |                               |                      |  |   |  |                                      |                        |                                      |  |
| $M_{\rm S} = 0.315 \text{ (Exit)}$<br>$S_{\rm R} = 51.6 \text{ mph (}$ | •  |                               |                      |  |   | ph (Exhibit 25-1<br>ph (Exhibit 25-1                       |                                      |                        |                                      |  |

|  | RAI                                | MPS AND                      | RAMP JUNG                       | CTIONS W   | /ORKSHE  | EET   |                 |  |                                       |  |
|--|------------------------------------|------------------------------|---------------------------------|--|--|---|-----------------|--|---------------------------------------|--|
| General Info   |                                    |                              |                                 | Site Infor   |  |   |                 |  |                                       |  |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric | SEB<br>V CHA<br>02/15<br>d PM      |                              | Fre<br>Jui<br>Jui               | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | avel   | Southbound I-<br>Exit 5 SB On-I<br>NYSDOT<br>2016 Diamond | Ramp            |  |                                       |  |
| Project Description  | Exit 4                             |                              |                                 |  |  |   |                 |  |                                       |  |
| Inputs   |                                    | <del></del>                  |                                 |  |  |   |                 |  |                                       |  |
| Upstream Adj Ram   |                                    | Terrain: Level               |                                 |  |  |   |                 | Downstr<br>Ramp                                      | eam Adj                               |  |
| Yes TO   |                                    |                              |                                 |  |  |   |                 | ✓ Yes  | ☐ On                                  |  |
| ™ No □ O   | Π                                  |                              |                                 |  |  |   |                 | □ No   | ✓ Off                                 |  |
| <sub>-up</sub> = ft  |                                    |                              | E4.0 mnh                        |  | <u> </u>   | 0.0 mnh   |                 | L <sub>down</sub> =                                  | 6100 ft                               |  |
| $V_u = veh/$   | h                                  | 3                            | $_{FF}$ = 56.0 mph<br>Sketch (s | show lanes, L <sub>A</sub> ,                           | $S_{FR} = 4$<br>, $L_{D'}V_{R'}V_{f}$                    | .u.u mpn  |                 | V <sub>D</sub> =                                     | 970 veh/h                             |  |
| Conversion   | to pc/h Und                        | der Base C                   | Conditions                      |  |  |   |                 |  |                                       |  |
| (pc/h)   | V<br>(Veh/hr)                      | PHF                          | Terrain                         | %Truck   | %Rv  | f <sub>HV</sub>   | f <sub>p</sub>  | v = V/PH   | HF x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 3000                               | 0.92                         | Level                           | 2  | 0  | 0.990   | 1.00            |  | 3293                                  |  |
| Ramp   | 630                                | 0.87                         | Level                           | 1  | 0  | 0.995   | 1.00            |  | 728                                   |  |
| UpStream<br>DownStream   | 970                                | 0.92                         | Level                           | 2  | 0  | 0.990   | 1.00            |  | 1065                                  |  |
| Downstieam   |                                    | Merge Areas                  | Levei                           | Z  | 1 0  | 0.990   | Diverge A       | reas   | 1000                                  |  |
| Estimation o   |                                    | g                            |                                 |  | Estimati   | ion of v <sub>12</sub>                                    |                 |  |                                       |  |
|  | V <sub>12</sub> = V <sub>F</sub>   | ( P <sub>EM</sub> )          |                                 |  | †  |   |                 | \/ \D  |                                       |  |
| L <sub>EQ</sub> = 4282.27 (Equation 25-2 or 25-3)                    |                                    |                              |                                 |  | -  | V 12  | $= V_R + (V_R)$ | F <sup>- v</sup> R <sup>)F</sup> FD<br>on 25-8 or 25 | -0)                                   |  |
| P <sub>FM</sub> = 0.614 using Equation (Exhibit 25-5)                |                                    |                              |                                 |  | L <sub>EQ</sub> =<br>P =                                 |   |                 | quation (Exhib                                       |                                       |  |
| V <sub>12</sub> =  | 2022                               |                              | ,                               |  | P <sub>FD</sub> =<br>V <sub>12</sub> =                   |   | pc/h            | quation (Exhib                                       | 11 25-12)                             |  |
| V <sub>3</sub> or V <sub>av34</sub>                                  | 1271                               | pc/h (Equatio                | n 25-4 or 25-                   |  | V <sub>12</sub> –<br>V <sub>3</sub> or V <sub>av34</sub> |   | •               | ıation 25-15 or 2                                    | 95-16)                                |  |
|  | 5)                                 | <b>—</b>                     |                                 |  |  | <sub>34</sub> > 2,700 pc/h                                |                 |  | .5 10)                                |  |
| Is $V_3$ or $V_{av34} > 2.7$   |                                    |                              |                                 |  |  | <sub>34</sub> > 1.5 * V <sub>12</sub> /2                  |                 |  |                                       |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                         | · <del>-</del>                     | s  ™ No<br>(Equation 25      | 0)                              |  | If Yes, $V_{12a} = pc/h$ (Equation 25-18)                |   |                 |  |                                       |  |
| f Yes,V <sub>12a</sub> =<br><b>Capacity Ch</b>                       |                                    | (Equation 25                 | -0)                             |  | Capacity Checks  |   |                 |  |                                       |  |
| Capacity Cit   | Actual                             |                              | apacity                         | LOS F?   | Capacit  | Acti  | ī               | Capacity   | LOS F                                 |  |
|  | notaai                             | † ĭ                          | puolty                          | 1 2001.  | V <sub>F</sub>   | 71010   |                 | oit 25-14  | 2031                                  |  |
| $V_{FO}$   | 4021                               | Exhibit 25-7                 |                                 | No   | $V_{FO} = V_{F}$   | - V <sub>D</sub>  |                 | oit 25-14  |                                       |  |
| FO   |                                    |                              |                                 |  | V <sub>R</sub>   | - K   | _               | oit 25-3   |                                       |  |
| Flow Enterin   | na Merae In                        | fluence A                    | rea                             | <u> </u>   | -  | terina Di   |                 | fluence Ar   | <br>ea                                |  |
| TOW EMEM   | Actual                             |                              | Desirable                       | Violation?   | 1 1011 211   | Actual  |                 | C Desirable  | Violation                             |  |
| V <sub>R12</sub>   | 2750                               | Exhibit 25-7                 | 4600:All                        | No   | V <sub>12</sub>  |   | Exhibit 25      |  |                                       |  |
| Level of Ser   | vice Detern                        | nination (i                  | f not F)                        |  |  | Service   | Determii        | nation (if n   | ot F)                                 |  |
| D <sub>R</sub> = 5.475   | + 0.00734 v <sub>R</sub> + 0       | 0.0078 V <sub>12</sub> - 0.0 | 0627 L <sub>A</sub>             |  | ı  | D <sub>R</sub> = 4.252                                    | + 0.0086 V      | <sub>12</sub> - 0.009 L <sub>D</sub>                 |                                       |  |
| O <sub>R</sub> = 18.4 (p   | c/mi/ln)                           |                              |                                 |  | $D_R = (p$   | c/mi/ln)  |                 |  |                                       |  |
| OS = B (Exh  | ibit 25-4)                         |                              |                                 |  | LOS = (E   | xhibit 25-4)  |                 |  |                                       |  |
| Speed Deter  | mination                           |                              |                                 |  |  | Determina   | tion            |  |                                       |  |
| M <sub>S</sub> = 0.278 (E)   | ribit 25-19)                       |                              |                                 |  | D <sub>s</sub> = (Exhibit 25-19)                         |   |                 |  |                                       |  |
| S <sub>R</sub> = 52.1 mph  | (Exhibit 25-19)                    |                              |                                 |  | 1 "  | ph (Exhibit 25-   |                 |  |                                       |  |
| K  |                                    |                              |                                 |  |  |   |                 |  |                                       |  |
| $S_0 = 53.2 \text{ mph}$   | (Exhibit 25-19)<br>(Exhibit 25-14) |                              |                                 |  | $S_0 = m_1$  | ph (Exhibit 25-   | 19)             |  |                                       |  |

|   |                                       | FREEWA                | Y WEAV   | ING WOR  | KSHEE          | T   |  |              |  |
|---|---------------------------------------|-----------------------|--|--|----------------|---|--|--------------|--|
| General Informa   | tion                                  |                       |  | Site Info  | rmation        |   |  |              |  |
| Analyst<br>Agency/Company<br>Date Performed<br>Analysis Time Period                         | SEB<br>CHA<br>02/15<br>PM             | /12                   |  | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | I-87 Northbound<br>Exit 2E on to 2W off<br>NYSDOT<br>2016 Diamond |  |              |  |
| Inputs  |                                       |                       |  | _  |                |   |  |              |  |
| Freeway free-flow speed,<br>Weaving number of lanes<br>Weaving seg length, L (ft<br>Terrain | s, N                                  | 56<br>4<br>815<br>Lev | rel veaving ratio, K                             |  | , VR           |   |  | .21<br>.35   |  |
| Conversions to  | pc/h Unde                             | er Base C             | ondition   |  |                |   |  |              |  |
| (pc/h) V  | PHF                                   | Truck %               | RV %   | E <sub>T</sub>   | E <sub>R</sub> | f <sub>HV</sub>   | fp   | V            |  |
| V <sub>01</sub> 4220  | 0.86                                  | 2                     | 0  | 1.5  | 1.2            | 0.990   | 1.00   | 4956         |  |
| V <sub>o2</sub> 0   | 0.92                                  | 2                     | 0  | 1.5  | 1.2            | 0.990   | 1.00   | 0            |  |
| V <sub>w1</sub> 800   | 0.92                                  | 2                     | 0  | 1.5  | 1.2            | 0.990   | 1.00   | 878          |  |
| V <sub>w2</sub> 430   | 0.92                                  | 2                     | 0  | 1.5  | 1.2            | 0.990   | 1.00   | 472          |  |
| V <sub>w</sub>  |                                       | •                     | 1350   | $V_{nw}$   |                |   | ,  | 4956         |  |
| V   |                                       |                       |  | TIW  |                |   |  | 6306         |  |
| Weaving and No  | n-Weavin                              | g Speeds              | <u> </u>   |  |                |   |  |              |  |
|   |                                       | Unconstr              |  |  |                | Cons  | trained  |              |  |
| /E  | Weaving                               |                       | 1  | ving (i = nw)  | Weavii         | ng (i = w)  | Non-Wea  | ving ( = nw) |  |
| a (Exhibit 24-6)  | 0.1                                   |                       | <del>                                     </del> | .00  |                |   |  |              |  |
| b (Exhibit 24-6)<br>c (Exhibit 24-6)  | 0.9                                   |                       |  | .30  |                |   |  |              |  |
| d (Exhibit 24-6)  | 0.80                                  |                       |  | .75  |                |   | <del>                                     </del> |              |  |
| Weaving intensity factor, Wi  | 1.30                                  |                       | <u> </u>   | .72  |                |   | 1  |              |  |
| Weaving and non-weaving speeds, Si (mi/h)   | 34.4                                  | 7                     | 41   | .81  |                |   |  |              |  |
| Number of lanes required<br>Maximum number of lane  |                                       | ned operation,        | Nw   | 1.25<br>1.40   |                |   |  |              |  |
|   | w(max) uncons                         | trained operat        | ion  |  | if Nw > N      | w (max) consti  | rained operati                                   | on           |  |
| Weaving Segme   |                                       |                       |  |  |                | , ,   |  |              |  |
| Weaving segment speed   | S (mi/h)                              | ,                     | 39.99  |  |                | •   |  |              |  |
| Weaving segment density   |                                       |                       | 39.42  |  |                |   |  |              |  |
| Level of service, LOS   | · · · · · · · · · · · · · · · · · · · |                       | Е  |  |                |   |  |              |  |
| Capacity of base conditio   | n, c <sub>b</sub> (pc/h)              |                       | 6665   |  |                |   |  |              |  |
| Capacity as a 15-minute   |                                       | h/h)                  | 6599   |  |                |   |  |              |  |
| Capacity as a full-hour vo  |                                       | -                     | 5764   |  |                |   |  |              |  |
| Notes   | 11                                    |                       |  |  |                |   |  |              |  |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  |  |                            | FREEWA                | Y WEAV           | /ING WOR   | KSHEE          | Т   |                   |              |
|--|--|----------------------------|-----------------------|------------------|--|----------------|---|-------------------|--------------|
| Genera   | l Informat   | ion                        |                       |                  | Site Info  | rmation        |   |                   |              |
| Analyst<br>Agency/Cor<br>Date Perfor<br>Analysis Tir | med  | SEB<br>CHA<br>02/15/<br>PM | 12                    |                  | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | I-87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2016 Diamond |                   |              |
| Inputs   |  |                            |                       |                  |  |                |   |                   |              |
| Weaving nu   | ee-flow speed,<br>umber of lanes,<br>eg length, L (ft) | 11 1                       | 56<br>4<br>810<br>Lev | el Weaving ratio |  | , VR           |   | A<br>0.19<br>0.10 |              |
| Conver   | sions to p   | c/h Unde                   | er Base C             | ondition         | าร   | r              |   | 1                 |              |
| (pc/h)   | V  | PHF                        | Truck %               | RV %             | E <sub>T</sub>   | E <sub>R</sub> | f <sub>HV</sub>   | fp                | V            |
| $V_{o1}$   | 3220   | 0.92                       | 2                     | 0                | 1.5  | 1.2            | 0.990   | 1.00              | 3534         |
| $V_{o2}$   | 0  | 0.92                       | 2                     | 0                | 1.5  | 1.2            | 0.990   | 1.00              | 0            |
| $V_{w1}$   | 680  | 0.92                       | 2                     | 0                | 1.5  | 1.2            | 0.990   | 1.00              | 746          |
| $V_{w2}$   | 80   | 0.92                       | 2                     | 0                | 1.5  | 1.2            | 0.990   | 1.00              | 87           |
| $V_{_{\mathrm{W}}}$                                  |  |                            | •                     | 833              | V <sub>nw</sub>  |                |   |                   | 3534         |
| V  | 7  |                            |                       | L                |  | ı              |   |                   | 4367         |
| Weavin   | g and No   | n-Weavin                   | g Speeds              | 5                |  |                |   |                   |              |
|  |  |                            | Unconstr              |                  |  |                |   | trained           |              |
| o (Eyhibit 2   | 1 ()   | Weaving                    |                       | 4                | ving (i = nw)  | Weavir         | ng (i = w)  | Non-Wea           | ving ( = nw) |
| a (Exhibit 2)<br>b (Exhibit 2)                       |  | 0.15<br>2.20               |                       | <del> </del>     | .00  |                |   |                   |              |
| c (Exhibit 2   |  | 0.97                       |                       | 1                | .30  |                |   |                   |              |
| d (Exhibit 2   |  | 0.80                       | )                     | 0                | .75  |                |   |                   |              |
| Weaving intens                                       |  | 0.92                       | )                     | 0                | .41  |                |   |                   |              |
| Weaving and no<br>speeds, Si (mi/l                   |  | 38.9                       | 8                     | 47               | 7.56   |                |   |                   |              |
| Number of I  | lanes required number of lanes                         |                            | ned operation,        | , Nw             | 1.11<br>1.40   |                |   |                   |              |
|  | If Nw < Nw   |                            | trained operat        | ion              | _  | if Nw > Nv     | v (max) consti  | rained operati    | on           |
|  |  | <u> </u>                   |                       |                  | f Service,   |                |   |                   |              |
|  | egment speed,  |                            |                       | 45.65            |  |                | J   |                   |              |
|  | egment density   |                            |                       | 23.92            |  |                |   |                   |              |
| Level of ser   | vice, LOS  |                            |                       | С                |  |                |   |                   |              |
| Capacity of  | base condition   | ı, c <sub>b</sub> (pc/h)   |                       | 6788             |  |                |   |                   |              |
| Capacity as  | a 15-minute fl   | ow rate, c (vel            | n/h)                  | 6721             |  |                |   |                   |              |
| Capacity as  | a full-hour vol  | ume, c <sub>h</sub> (veh/h | n)                    | 6183             |  |                |   |                   |              |
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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

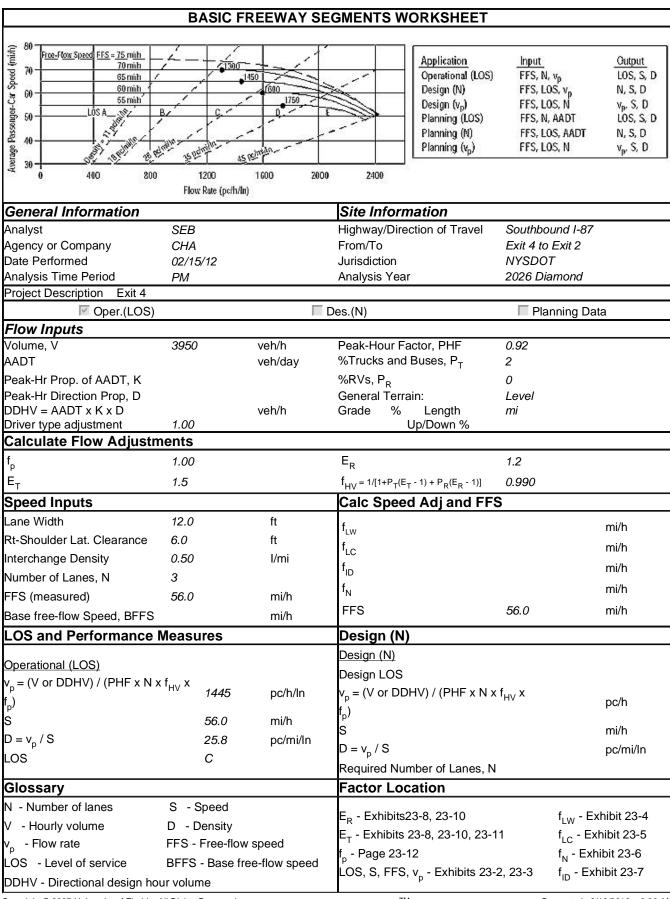
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

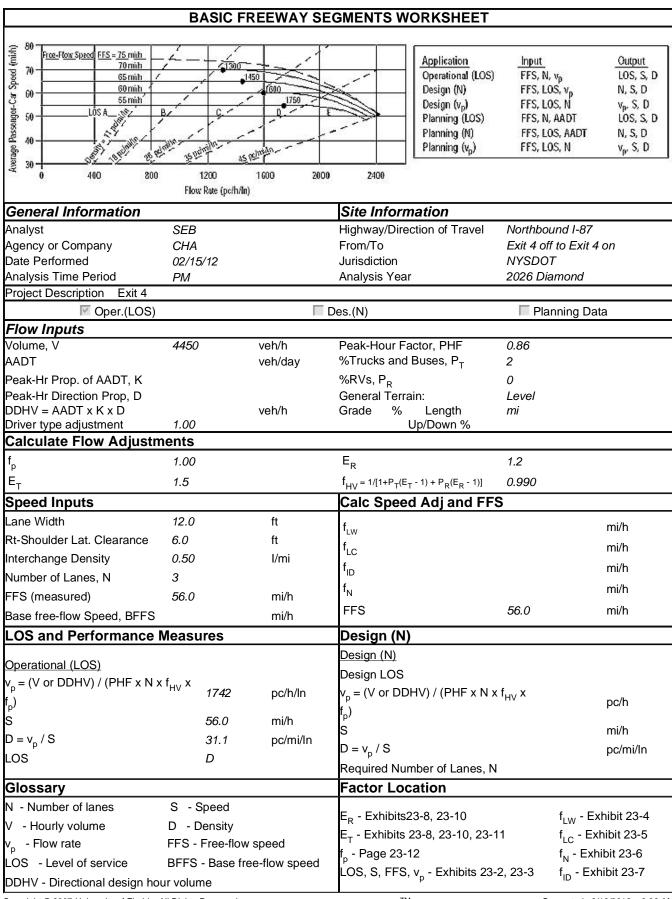
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  | BASIC F             | REEWAY SE                             | GMENTS W                  | ORKSHEET   |   |                    |
|--|---------------------|---------------------------------------|---------------------------|--|---|--------------------|
| 80 Free-Flow Spzed FFS = 75 mith 70 mith 70 mith 65 mith 65 mith 55 mith 55 mith 65 mi | By C.               | 450<br>(600)<br>1750<br>0<br>1600 200 | 2400                      | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AA FFS, LOS, N |                    |
| General Information  | Flow Rate (pc/h/lin | )                                     | Site Inform               | mation   |   |                    |
| Analyst  | SEB                 |                                       |                           | ection of Travel   | Northbound I  | -87                |
| Agency or Company  | CHA                 |                                       | From/To                   | ction of maver   | Exit 2 to Exit  |                    |
| Date Performed   | 02/15/12            |                                       | Jurisdiction              |  | NYSDOT  | •                  |
| Analysis Time Period   | PM                  |                                       | Analysis Yea              | r  | 2026 Diamor   | d                  |
| Project Description Exit 4   |                     |                                       |                           |  |   |                    |
| Oper.(LOS)   |                     |                                       | Des.(N)                   |  | ☐ Planning  | g Data             |
| Flow Inputs  |                     |                                       |                           |  |   |                    |
| Volume, V  | <i>5450</i>         | veh/h                                 | Peak-Hour F               |  | 0.86  |                    |
| AADT   |                     | veh/day                               | %Trucks and               | l Buses, P <sub>T</sub>  | 2   |                    |
| Peak-Hr Prop. of AADT, K   |                     |                                       | %RVs, P <sub>R</sub>      |  | 0   |                    |
| Peak-Hr Direction Prop, D  |                     | <b>  </b>                             | General Terra             |  | Level   |                    |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00                | veh/h                                 | Grade %                   | Length<br>Up/Down %  | mi  |                    |
| Calculate Flow Adjustr   |                     |                                       |                           | Op/20W11 70  |   |                    |
| f <sub>p</sub>   | 1.00                |                                       | E <sub>R</sub>            |  | 1.2   |                    |
|  | 1.5                 |                                       |                           | · 4) . D /F 4)1  | 0.990   |                    |
| E <sub>T</sub>   | 1.0                 |                                       |                           | E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   |   |                    |
| Speed Inputs   | 40.0                | <u> </u>                              | Caic Spee                 | d Adj and FFS  | )   |                    |
| Lane Width   | 12.0                | ft                                    | $f_LW$                    |  |   | mi/h               |
| Rt-Shoulder Lat. Clearance   | 6.0                 | ft                                    | $f_LC$                    |  |   | mi/h               |
| Interchange Density  | 0.50                | l/mi                                  | f <sub>ID</sub>           |  |   | mi/h               |
| Number of Lanes, N   | 3                   |                                       | f                         |  |   | mi/h               |
| FFS (measured)   | 56.0                | mi/h                                  | 'N                        |  |   |                    |
| Base free-flow Speed, BFFS   |                     | mi/h                                  | FFS                       |  | 56.0  | mi/h               |
| LOS and Performance  | Measures            |                                       | Design (N                 | )  |   |                    |
| Operational (LOS)<br>V <sub>p</sub> = (V or DDHV) / (PHF x N   | x f <sub>HV</sub> x |                                       | Design (N) Design LOS     | NINA //BUE N   | £   |                    |
| f <sub>p</sub> )   | 2134                | pc/h/ln                               | 1.5                       | OHV) / (PHF x N x  | ı <sub>HV</sub> x   | pc/h               |
| S  | 53.1                | mi/h                                  | f <sub>p</sub> )          |  |   | mi/h               |
| $D = v_p / S$  | 40.2                | pc/mi/ln                              | 0<br>D-7//8               |  |   |                    |
| LOS  | E                   |                                       | $D = v_p / S$             | mah an at lea  |   | pc/mi/ln           |
| Classom  |                     |                                       |                           | mber of Lanes, N   |   |                    |
| Glossary   |                     |                                       | Factor Loc                | cation   |   |                    |
| N - Number of lanes  | S - Speed           |                                       | E <sub>R</sub> - Exhibits | 23-8, 23-10  | f,  | - Exhibit 23-4     |
| V - Hourly volume  | D - Density         | _                                     | .,                        | 23-8, 23-10, 23-1  | =   | - Exhibit 23-5     |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow     |                                       | f <sub>p</sub> - Page 23- |  |   | Exhibit 23-6       |
| LOS - Level of service   | BFFS - Base from    | ee-flow speed                         | ۲                         | , v <sub>p</sub> - Exhibits 23-2   | •   | - Exhibit 23-7     |
| DDHV - Directional design ho   | our volume          |                                       |                           | , t <sub>p</sub> = Zillolto 20-2   | -, 'ID  |                    |
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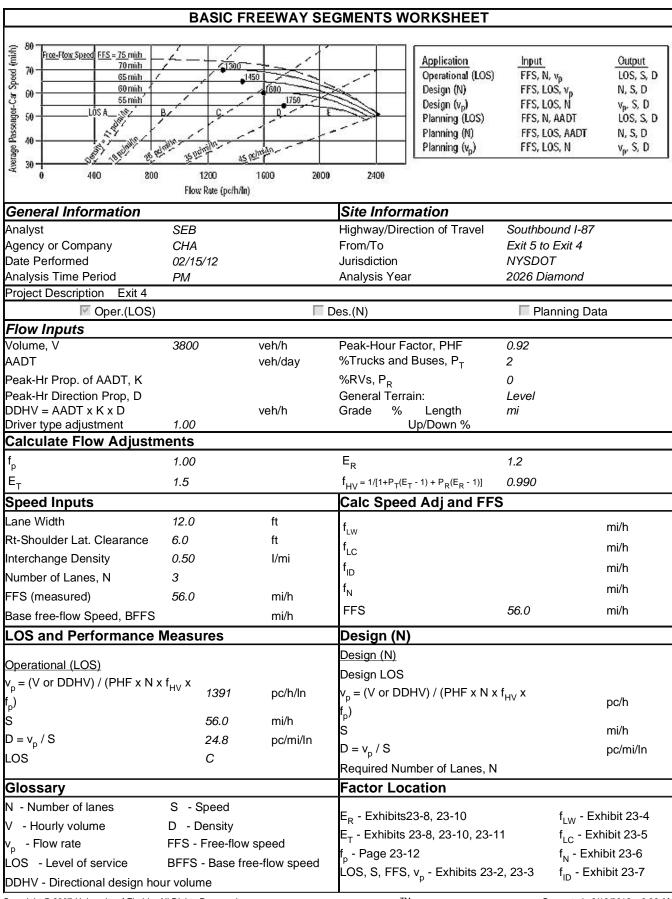
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|  | BASIC F   | REEWAY SE                 | GMENTS W   | ORKSHEET   |  |   |
|--|---|---------------------------|--|--|--|---|
| S0   Free-Flow Speed   FES = 75 mith   70 mith   70 mith   65 mith   65 mith   55 mith   50   1.05 A | B C C   | 150<br>(500)<br>1750<br>0 |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO<br>FFS, LO<br>FFS, N,<br>FFS, LO | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D          |
| <b>0</b> 400 200   | 1200<br>Flow Rate (pc/h/lin                             | 1600 2000<br>)            | 2400   |  |  |   |
| General Information  |   |                           | Site Inform  |  |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>PM                            |                           | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea                              | ection of Travel   | Southbou<br>Exit 4 off<br>NYSDOT<br>2026 Dia                 | to Exit 4 on<br>-   |
| ✓ Oper.(LOS)   |   | П                         | Des.(N)  |  | ☐ Plar   | nning Data  |
| Flow Inputs  |   |                           | 200.(1.1)  |  |  | g = a.a.  |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K  | 2750  | veh/h<br>veh/day          | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub>                                  |  | 0.92<br>2<br>0   |   |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment   | 1.00  | veh/h                     | General Terra<br>Grade %   | ain:<br>Length<br>Up/Down %  | Level<br>mi  |   |
| Calculate Flow Adjustr   | nents   |                           |  | •  |  |   |
| $f_p$  | 1.00  |                           | E <sub>R</sub>   |  | 1.2  |   |
| E <sub>T</sub>   | 1.5   |                           | f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E   | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |   |
| Speed Inputs   |   |                           | Calc Spee  | d Adj and FFS  | ;  |   |
| Lane Width   | 12.0  | ft                        | f <sub>LW</sub>  |  |  | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0   | ft                        | f <sub>LC</sub>  |  |  | mi/h  |
| Interchange Density  | 0.50  | I/mi                      |  |  |  |   |
| Number of Lanes, N   | 3   |                           | f <sub>ID</sub>  |  |  | mi/h  |
| FFS (measured)   | 56.0  | mi/h                      | t <sub>N</sub>   |  |  | mi/h  |
| Base free-flow Speed, BFFS   |   | mi/h                      | FFS  |  | 56.0   | mi/h  |
| LOS and Performance  | Measures  |                           | Design (N  | )  |  |   |
| Operational (LOS)<br>V <sub>p</sub> = (V or DDHV) / (PHF x N x   |   | pc/h/ln                   | Design (N)<br>Design LOS   | DHV) / (PHF x N x :  | f <sub>uv</sub> x  |   |
| $f_p$ )  |   | •                         | f <sub>p</sub> )   | , ,  | 117  | pc/h  |
| S  | 56.0  | mi/h                      | S  |  |  | mi/h  |
| $D = v_p / S$  | 18.0  | pc/mi/ln                  | $D = v_p / S$  |  |  | pc/mi/ln  |
| LOS  | В   |                           | F  | mber of Lanes, N   |  | r   |
| Glossary   |   |                           | Factor Loc   |  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base front |                           | E <sub>R</sub> - Exhibits:<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_N$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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|  | BASIC F  | REEWAY SE                                | GMENTS W   | ORKSHEET   |   |   |
|--|--|--|--|--|---|---|
| 80 Froe-Flow Speed FFS = 75 mith 70 mith 70 mith 65 mith 55 mith 55 mith 60 mith 75 mi | B C C  | 450<br>(600<br>1750<br>0<br>1600<br>2001 | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v<br>FFS, LOS<br>FFS, N, A<br>FFS, LOS<br>FFS, LOS | , v <sub>p</sub> N, S, D<br>, N v <sub>p</sub> , S, D<br>, ADT LOS, S, D<br>, AADT N, S, D            |
| General Information  | Flow Rate (pc/h/lin                                    | L <sub>2</sub>                           | Site Inforn  | nation   |   |   |
| Analyst<br>Agency or Company<br>Date Performed   | SEB<br>CHA<br>02/15/12                                 |  | Highway/Dire<br>From/To<br>Jurisdiction                              | ction of Travel  | Northbour<br>Exit 4 to E<br>NYSDOT                                  | Exit 5  |
| Analysis Time Period Project Description Exit 4  | PM   |  | Analysis Yea   | r  | 2026 Diar   | mond  |
| Oper.(LOS)   |  |  | Des.(N)  |  | ☐ Plan  | ning Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 5700   | veh/h<br>veh/day                         | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra | Buses, P <sub>T</sub>  | 0.86<br>2<br>0<br>Level   |   |
| DDHV = AADT x K x D Driver type adjustment   | 1.00   | veh/h                                    | Grade %  | Length<br>Up/Down %  | mi  |   |
| Calculate Flow Adjustr   |  |  |  |  | 10  |   |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.00<br>1.5  |  | E <sub>R</sub>   | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 1.2<br>0.990  |   |
| Speed Inputs   | 7.0  |  |  | d Adj and FFS  |   |   |
| Lane Width   | 12.0   | ft                                       |  | a Aaj ana 11 c   | <u> </u>  | • 11  |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft                                       | f <sub>LW</sub>  |  |   | mi/h  |
| Interchange Density  | 0.50   | I/mi                                     | f <sub>LC</sub>  |  |   | mi/h  |
| Number of Lanes, N   | 3  |  | $f_ID$   |  |   | mi/h  |
| FFS (measured)   | 56.0   | mi/h                                     | f <sub>N</sub>   |  |   | mi/h  |
| Base free-flow Speed, BFFS   |  | mi/h                                     | FFS  |  | 56.0  | mi/h  |
| LOS and Performance  | Measures   |  | Design (N)   |  |   |   |
| Operational (LOS)  V <sub>p</sub> = (V or DDHV) / (PHF x N f <sub>p</sub> ) S  | x f <sub>HV</sub> x 2231                               | pc/h/ln<br>mi/h                          | $f_p$ )  | HV) / (PHF x N x   | f <sub>HV</sub> x   | pc/h  |
| D = v <sub>p</sub> / S<br>LOS  | 43.7<br>E  | pc/mi/ln                                 | S<br>D = v <sub>p</sub> / S<br>Required Nur                          | mber of Lanes, N   |   | mi/h<br>pc/mi/In  |
| Glossary   |  |  | Factor Loc   |  |   |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service  | S - Speed D - Density FFS - Free-flow BFFS - Base free |  | f <sub>p</sub> - Page 23-  | 23-8, 23-10, 23-1  | 1   | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_N$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design ho   |  |  |  | Version 5.3  |   | erated: 2/16/2012 9:36  |

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|   | BASIC F                       | REEWAY SE                 | GMENTS W  | ORKSHEET   |   |                      |
|---|-------------------------------|---------------------------|---|--|---|----------------------|
| Froe-Flow Spzed   FFS = 75 mith   70 mith | By C.                         | 450<br>(600)<br>1750<br>0 |   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AA FFS, LOS, N |                      |
| 0 400 800   | ) 1200<br>Flow Rate (pc/h/lin | 1600 2000<br>)            | 2400  |  |   |                      |
| General Information   |                               |                           | Site Inform   |  |   |                      |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period  | CLD<br>CHA<br>07/30/13<br>PM  |                           | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea | ection of Travel<br>r  | Northbound I<br>Exit 5 to Exit<br>NYSDOT<br>2026 Diamon   | 6                    |
| Project Description Exit 4  Oper.(LOS)  |                               |                           | Dog (NI)  |  | □ Dianning  | n Doto               |
| Flow Inputs   |                               |                           | Des.(N)   |  | Planning  | j Dala               |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K   | 5900                          | veh/h<br>veh/day          | Peak-Hour Factor & Trucks and %RVs, P <sub>R</sub>      | Buses, P <sub>T</sub>  | 0.86<br>2<br>0  |                      |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjustr   | 1.00                          | veh/h                     | General Terr<br>Grade %                                 | ain:<br>Length<br>Up/Down %  | Level<br>mi   |                      |
|   | 1.00                          |                           | E <sub>R</sub>  |  | 1.2   |                      |
| f <sub>p</sub><br>E <sub>T</sub>  | 1.00<br>1.5                   |                           |   | 1)   | 0.990   |                      |
| Speed Inputs  | 1.5                           |                           |   | $\frac{1}{1} - 1 + P_R(E_R - 1)$   |   |                      |
| Lane Width  | 12.0                          | ft                        |   | d Adj and FFS  |   |                      |
| Rt-Shoulder Lat. Clearance  | 6.0                           | ft                        | f <sub>LW</sub>   |  |   | mi/h                 |
| Interchange Density   | 0.50                          | I/mi                      | $f_{LC}$  |  |   | mi/h                 |
| Number of Lanes, N  | 4                             | <b>,</b>                  | $f_{ID}$  |  |   | mi/h                 |
| FFS (measured)  | 56.0                          | mi/h                      | f <sub>N</sub>  |  |   | mi/h                 |
| Base free-flow Speed, BFFS  |                               | mi/h                      | FFS   |  | 56.0  | mi/h                 |
| LOS and Performance   | Measures                      |                           | Design (N   | )  |   |                      |
| Operational (LOS)  V <sub>p</sub> = (V or DDHV) / (PHF x N : f <sub>p</sub> )   | x f <sub>HV</sub> x 1732      | pc/h/ln                   | Design (N) Design LOS $v_p = (V \text{ or DD})$         | )HV) / (PHF x N x f  | :<br>: <sub>HV</sub> x  | pc/h                 |
| S   | 56.0                          | mi/h                      | t <sub>p</sub> )  |  |   | mi/h                 |
| D = v <sub>p</sub> / S  | 30.9                          | pc/mi/ln                  | S<br>D = v <sub>p</sub> / S                             |  |   | pc/mi/ln             |
| LOS   | D                             |                           | · ·   | mber of Lanes, N   |   |                      |
| Glossary  |                               |                           | Factor Lo   | cation   |   |                      |
| N - Number of lanes   | S - Speed                     |                           | E <sub>R</sub> - Exhibits                               | 23-8 23-10   | f   | - Exhibit 23-4       |
| V - Hourly volume   | D - Density                   |                           |   | 23-8, 23-10<br>23-8, 23-10, 23-11  |   | - Exhibit 23-5       |
| v <sub>p</sub> - Flow rate  | FFS - Free-flow               | speed                     | f <sub>p</sub> - Page 23-                               |  |   | Exhibit 23-6         |
| LOS - Level of service  | BFFS - Base fr                | ee-flow speed             | 1 '   | , v <sub>p</sub> - Exhibits 23-2   |   | Exhibit 23-7         |
| DDHV - Directional design ho  | our volume                    |                           |   | , <sub>p</sub> Exhibits 23-2   | , 200 I <sub>ID</sub>   | EATILOIT 20-1        |
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|  | BASIC F   | REEWAY SE   | GMENTS W  | ORKSHEET   |  |   |
|--|---|---|---|--|--|---|
| Free-Flow Spzed FIS = 75 mith 70 mit | B C C   | 150 1750 1750 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v FFS, LOS, N FFS, N, AAC FFS, LOS, A FFS, LOS, N | v <sub>p</sub> , S, D<br>vt LOS, S, D<br>ADT N, S, D              |
| General Information  | Flow Rate (pc/h/ln)                                   | Į į   | Site Inform   | mation   |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | CLD<br>CHA<br>07/30/13<br>PM                          |   |   | ection of Travel   | Southbound<br>Exit 6 to Exi<br>NYSDOT<br>2026 Diamo                                      | t 5   |
| ✓ Oper.(LOS)   |   |   | Des.(N)   |  | ☐ Plannir  | ng Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 3625  | veh/h<br>veh/day                                    | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terr                 | l Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level  |   |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00  | veh/h   | Grade %   | Length<br>Up/Down %  | mi   |   |
| Calculate Flow Adjustr   |   |   |   |  | 1.2  |   |
| f <sub>p</sub><br> Ε <sub>Τ</sub>  | 1.00<br>1.5   |   | E <sub>R</sub>  | · 4) . D /E 4)]  | 0.990  |   |
| Speed Inputs   | 1.5   |   |   | ed Adj and FFS   |  |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>4<br>56.0                      | ft<br>ft<br>I/mi<br>mi/h                            | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub>                      | a Auj ana 11 o   |  | mi/h<br>mi/h<br>mi/h<br>mi/h                                      |
| Base free-flow Speed, BFFS   |   | mi/h  | FFS   |  | 56.0   | mi/h  |
| LOS and Performance  |   |   | Design (N   | )  |  |   |
| Operational (LOS)  v <sub>p</sub> = (V or DDHV) / (PHF x N : f <sub>p</sub> )  |   | pc/h/ln   | $\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DD})$             | 0HV) / (PHF x N x t  | f <sub>HV</sub> x  | pc/h  |
| S<br>D = v <sub>p</sub> / S<br>LOS   | 56.0<br>17.8<br>B                                     | mi/h<br>pc/mi/ln                                    | r <sub>p</sub> ) S D = v <sub>p</sub> / S Required Nu                               | mber of Lanes, N   |  | mi/h<br>pc/mi/ln  |
| Glossary   |   |   | Factor Loc  | · · · · · · · · · · · · · · · · · · ·  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fre | -   | E <sub>R</sub> - Exhibits<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1 f <sub>L</sub>   | N - Exhibit 23-4 C - Exhibit 23-5 - Exhibit 23-6 C - Exhibit 23-7 |
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| /hr) 0 N  | S  Ver Base C  PHF  0.86  0.92  0.92  Alerge Areas               | Ju<br>An<br>An<br><sub>FF</sub> = 56.0 mph   | Site Information of Transition | avel   | Northbound   Exit 2W On-I NYSDOT 2026 Diamor   | Ramp  nd  f <sub>p</sub> 1.00  |   | ☐ On ☐ Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub>  |  |  |
|---|--|--|--|--|--|--|---|--|--|--|
| CHA<br>02/15/<br>PM                                   | S  Ver Base C  PHF  0.86  0.92  0.92  Alerge Areas               | Ju Ju An An Sketch (s Conditions Terrain Level Level   | nction risdiction nalysis Year show lanes, L <sub>A'</sub> %Truck 2 2  | $S_{FR} = 4$ $L_{D}, V_{R}, V_{f}$ $\% RV$ $0$           | Exit 2W On-I<br>NYSDOT<br>2026 Diamor<br>0.0 mph   | Ramp  nd  f <sub>p</sub> 1.00  | Ramp Yes No L <sub>down</sub> = V <sub>D</sub> =                                    | ☐ On ☐ Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub>  |  |  |
| 02/15/<br>PM  | S  Ver Base C  PHF  0.86  0.92  0.92  Alerge Areas               | Ju An An  FF = 56.0 mph Sketch (s  Conditions  Terrain Level Level   | show lanes, L <sub>A</sub> .  %Truck  2 2  | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f'}$ $\%RV$ $0$             | NYSDOT<br>2026 Diamor<br>0.0 mph   | f <sub>p</sub> 1.00  | Ramp Yes No L <sub>down</sub> = V <sub>D</sub> =                                    | ☐ On ☐ Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub>  |  |  |
| PM  D  O  O  O  O  O  O  O  O  O  O  O  O             | S  Ver Base C  PHF  0.86  0.92  0.92  Alerge Areas               | An  FF = 56.0 mph Sketch (s  Conditions  Terrain Level Level   | show lanes, L <sub>A</sub> ,  %Truck  2 2  | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f'}$ $\%RV$ $0$             | NYSDOT<br>2026 Diamor<br>0.0 mph   | f <sub>p</sub> 1.00  | Ramp Yes No L <sub>down</sub> = V <sub>D</sub> =                                    | ☐ On ☐ Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub>  |  |  |
| PM  D  O  O  O  O  O  O  O  O  O  O  O  O             | S  Ver Base C  PHF  0.86  0.92  0.92  Alerge Areas               | <sub>FF</sub> = 56.0 mph<br>Sketch (s<br><b>Conditions</b><br>Terrain<br>Level<br>Level  | show lanes, L <sub>A</sub> , %Truck 2 2  | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f'}$ $\%RV$ $0$             | 0.0 mph  | f <sub>p</sub> 1.00  | Ramp Yes No L <sub>down</sub> = V <sub>D</sub> =                                    | On Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub>  |  |  |
| /hr) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0            | PHF  0.86  0.92  0.92  Merge Areas                               | <sub>FF</sub> = 56.0 mph<br>Sketch (s<br><b>Conditions</b><br>Terrain<br>Level<br>Level  | show lanes, L <sub>A</sub> , %Truck 2 2  | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$ $\%RV$ $0$              | 0.0 mph  | f <sub>p</sub> 1.00  | Ramp Yes No L <sub>down</sub> = V <sub>D</sub> =                                    | On Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub>  |  |  |
| /hr) 0 N  | PHF  0.86  0.92  0.92  Merge Areas                               | FF = 56.0 mph Sketch (s Conditions Terrain Level Level   | %Truck<br>2<br>2   | L <sub>D</sub> ,V <sub>R</sub> ,V <sub>f</sub> )  %Rv  0 | f <sub>HV</sub>  | 1.00   | Ramp Yes No L <sub>down</sub> = V <sub>D</sub> =                                    | ☐ On ☐ Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub>  |  |  |
| /hr) 0 N  | PHF  0.86  0.92  0.92  Merge Areas                               | FF = 56.0 mph Sketch (s Conditions Terrain Level Level   | %Truck<br>2<br>2   | L <sub>D</sub> ,V <sub>R</sub> ,V <sub>f</sub> )  %Rv  0 | f <sub>HV</sub>  | 1.00   | Ramp Yes No L <sub>down</sub> = V <sub>D</sub> =                                    | ☐ On ☐ Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub>  |  |  |
| /hr) 0 N  | PHF  0.86  0.92  0.92  Merge Areas                               | Sketch (s Conditions  Terrain  Level  Level  | %Truck<br>2<br>2   | L <sub>D</sub> ,V <sub>R</sub> ,V <sub>f</sub> )  %Rv  0 | f <sub>HV</sub>  | 1.00   | Yes No L <sub>down</sub> = V <sub>D</sub> =   | Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub>   |  |  |
| /hr) 0 N  | PHF  0.86  0.92  0.92  Merge Areas                               | Sketch (s Conditions  Terrain  Level  Level  | %Truck<br>2<br>2   | L <sub>D</sub> ,V <sub>R</sub> ,V <sub>f</sub> )  %Rv  0 | f <sub>HV</sub>  | 1.00   | $V_D = V/PH$  | Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub>   |  |  |
| /hr) 0 N  | PHF  0.86  0.92  0.92  Merge Areas                               | Sketch (s Conditions  Terrain  Level  Level  | %Truck<br>2<br>2   | L <sub>D</sub> ,V <sub>R</sub> ,V <sub>f</sub> )  %Rv  0 | f <sub>HV</sub>  | 1.00   | V <sub>D</sub> = v = V/PH   | veh/h  |  |  |
| /hr) 0 N  | PHF  0.86  0.92  0.92  Merge Areas                               | Sketch (s Conditions  Terrain  Level  Level  | %Truck<br>2<br>2   | L <sub>D</sub> ,V <sub>R</sub> ,V <sub>f</sub> )  %Rv  0 | f <sub>HV</sub>  | 1.00   | v = V/PH  | F x f <sub>HV</sub> x f <sub>p</sub>   |  |  |
| /hr) 0 N  | 0.86<br>0.92<br>0.92<br>0.92<br>Merge Areas                      | Terrain Level Level  | %Truck<br>2<br>2   | %Rv<br>0   | <b>├</b>   | 1.00   | v = V/PH  | <u>'</u>   |  |  |
| /hr) 0 N  | 0.86<br>0.92<br>0.92<br>0.92<br>Merge Areas                      | Terrain<br>Level<br>Level  | 2 2  | 0  | <b>├</b>   | 1.00   |   | <u>'</u>   |  |  |
| /hr) 0 N  | 0.86<br>0.92<br>0.92<br>Merge Areas                              | Level<br>Level   | 2 2  | 0  | <b>├</b>   | 1.00   |   | <u>'</u>   |  |  |
| N<br>2 = V <sub>F</sub> (                             | 0.92<br>0.92<br>Merge Areas                                      | Level  | 2  |  | 0.990  |  |   |  |  |  |
| N<br>2 = V <sub>F</sub> (                             | 0.92<br>Merge Areas  |  |  | 0  |  |  |   | 5461   |  |  |
| N<br>2 = V <sub>F</sub> (                             | Nerge Areas  | Level  | 2  |  | 0.990  | 1.00   |   | 856  |  |  |
| <sub>2</sub> = V <sub>F</sub> (                       | <u> </u>   |  | 1  | 0  | 0.990  | 1.00   |   | 922  |  |  |
| <sub>2</sub> = V <sub>F</sub> (                       | <u> </u>   |  |  |  |  |  |   |  |  |  |
|   |  |  |  |  |  | Diverge A  | reas  |  |  |  |
|   |  |  |  | Estimati   | ion of v <sub>1</sub>  | 12   |   |  |  |  |
|   | P)   |  |  | 1  |  |  | 1/ 15   |  |  |  |
|   |  |  |  |  |  | $_{12} = V_R + (V_I)$  |   |  |  |  |
| L <sub>EQ</sub> = 1419.04 (Equation 25-2 or 25-3)     |  |  |  |  |  | (Equation  | on 25-8 or 25-9   | 9)   |  |  |
| P <sub>FM</sub> = 0.581 using Equation (Exhibit 25-5) |  |  |  |  |  | using Ed   | quation (Exhibit  | 25-12)   |  |  |
| 173 p   | c/h  |  |  | V <sub>12</sub> =  |  | pc/h   |   |  |  |  |
|   | c/h (Equatio   | n 25-4 or 25-  |  | V <sub>3</sub> or V <sub>av34</sub>                      |  | •  | ation 25-15 or 25   | 5-16)  |  |  |
| )   |  |  |  |  | > 2.700 pc   | /h? ☐ Yes 「  |   | , 10)  |  |  |
|   | i ✓ No   |  |  |  |  |  |   |  |  |  |
| Yes   | . ✓ No   |  |  |  |  | /2 ☐ Yes 「   |   |  |  |  |
| pc/h (  | Equation 25  | -8)  |  | If Yes,V <sub>12a</sub> =                                |  | pc/h (Ec   | quation 25-18)  |  |  |  |
|   |  |  |  | Capacity   | v Check  | s  |   |  |  |  |
| ual   | Ca   | apacity  | LOS F?   | <u> </u>   | 1  |  | Capacity  | LOS F  |  |  |
|   | ĺ  | 7  | 1  | V-   |  |  |   |  |  |  |
| ,   | E 1 11 11 0E 7   |  |  | <u> </u>   | 1/   |  |   | _  |  |  |
| 1   | EXNIBIT 25-7   |  | NO   |  | - v <sub>R</sub>   |  |   | _  |  |  |
|   |  |  |  | $V_R$  |  | Exhib  | oit 25-3  |  |  |  |
| je Ini  | fluence A  | rea  |  | Flow En  | tering D   | iverge Inf   | fluence Are   | a  |  |  |
| ıal   | Max E  | Desirable  | Violation?   | ]  | Actual   | Max  | c Desirable   | Violation?   |  |  |
| 9   | Exhibit 25-7   | 4600:All   | No   | V <sub>12</sub>  |  | Exhibit 25   | 5-14  |  |  |  |
| term  | ination (i   | f not F)   | •  | Level of   | Service  | Determin   | nation (if no   | ot F)  |  |  |
|   |  |  |  | <del></del>  |  |  |   |  |  |  |
| K   | 12   | A  |  |  | • •  |  | 12 0  |  |  |  |
|   |  |  |  |  | ,  | 4)   |   |  |  |  |
| <u></u>   |  |  |  | · ·  |  |  |   |  |  |  |
|   |  |  |  |  |  |  |   |  |  |  |
| $M_S = 0.472 \text{ (Exibit 25-19)}$                  |  |  |  |  |  |  |   |  |  |  |
| 5-19)   |  |  |  | S <sub>R</sub> = mp                                      | on (Exhibit 2  | 5-19)  |   |  |  |  |
| 5-19)   |  |  |  | S <sub>0</sub> = mph (Exhibit 25-19)                     |  |  |   |  |  |  |
|   |  |  |  |  |  |  |   |  |  |  |
| 1 C ( )   | pc/h (  tual  17  ge In:  ual  29  eterm  V R + 0  25-19) 25-19) | tual Carlon 25  Exhibit 25-7  Ge Influence A  ual Max I  Exhibit 25-7  E | tual Capacity  17 Exhibit 25-7  ge Influence Area  ual Max Desirable  29 Exhibit 25-7 4600:All  etermination (if not F)  V R + 0.0078 V <sub>12</sub> - 0.00627 L <sub>A</sub> 500  25-19)   | tual Capacity LOS F?  17 Exhibit 25-7 No  18             | If Yes, $V_{12a} = Capacity   Capacity   Cos F?   V_F   V_{FO} = V_F   V_R   V_{FO} = V_F   V_{FO} = V_{FO} = V_{FO}   V_{FO} = V_{FO} = V_{FO} = V_{FO}   V_{FO} = V_{FO} $ | pc/h (Equation 25-8)    If Yes, $V_{12a} = $   Capacity Check     Italian   Capacity   LOS F?   Actual     Italian   V_F   V_F     Italian   V_F | pc/h (Equation 25-8)    If Yes, $V_{12a} = pc/h$ (Equation 25-8)    Capacity Checks | pc/h (Equation 25-8)      If Yes, V <sub>12a</sub> =   pc/h (Equation 25-18)     Capacity Checks |  |  |

|   |                | IVAIVIE             | S AND RAM                |   |  | 11110                          |                                      |   |                      |                                    |  |
|---|----------------|---------------------|--------------------------|---|--|--------------------------------|--------------------------------------|---|----------------------|------------------------------------|--|
| General Info  |                |                     |                          | Site Infor  |  |                                |                                      |   |                      |                                    |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 02/1           |                     | J                        | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year |  | Exit 4  <br>NYSD               | ound I-87<br>NB Off<br>OT<br>Diamond |   |                      |                                    |  |
| Project Description   |                |                     |                          | a.yo.o . oa.  |  | 2020 2                         | , idiniona                           |   |                      |                                    |  |
| Inputs  |                |                     |                          |   |  |                                |                                      |   |                      |                                    |  |
| Upstream Adj Ramp   | )              | Terrain: Leve       | I                        |   |  |                                |                                      |   | Downstrea<br>Ramp    | m Adj                              |  |
| ☐ Yes ☐ O   | n              |                     |                          |   |  |                                |                                      |   | ✓ Yes                | <b>™</b> On                        |  |
| ₩ No  | ff             |                     |                          |   |  |                                |                                      |   | □ No                 | ☐ Off                              |  |
| L <sub>up</sub> = ft  |                | S                   | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4  | 10.0 mi                        | oh                                   |   | L <sub>down</sub> =  | 1850 ft                            |  |
| V <sub>u</sub> = veh/ł  |                |                     | Sketch (                 | show lanes, L <sub>A</sub>                                  |  |                                |                                      |   | V <sub>D</sub> =     | 930 veh/                           |  |
| Conversion t  | to pc/h Un     | der Base (          | Conditions               |   |  |                                |                                      |   |                      |                                    |  |
| (pc/h)  | V<br>(Veh/hr)  | PHF                 | Terrain                  | %Truck  | %Rv  | f <sub>HV</sub> f <sub>p</sub> |                                      | f <sub>p</sub>                                      | v = V/PHF            | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway   | 5450           | 0.86                | Level                    | 2   | 0  | 0                              | .990                                 | 1.00  | 6401                 |                                    |  |
| Ramp  | 980            | 0.86                | Level                    | 2   | 0  | 0                              | .990                                 | 1.00  | 1151                 |                                    |  |
| UpStream  | 000            | 0.00                |                          | 1   |  | +-                             | 205                                  | 1.00  | 10.                  |                                    |  |
| DownStream  | 930            | 0.88<br>Merge Areas | Level                    | 1 1   | 0  | 0                              | .995                                 | 1.00<br>Diverge Areas                               | 106                  | 52                                 |  |
| Estimation o  |                | ivici ye Ai eas     |                          |   | Estimati   | ion d                          |                                      | Diverge Areas                                       |                      |                                    |  |
|   |                | (B)                 |                          |   | 200,7740   |                                |                                      | ., ., .,  | <u> </u>             |                                    |  |
| $V_{12} = V_F (P_{FM})$   |                |                     |                          |   |  |                                |                                      | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> |                      |                                    |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                             |                |                     |                          |   | L <sub>EQ</sub> =  |                                |                                      | Equation 25-8                                       |                      |                                    |  |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)                       |                |                     |                          |   | P <sub>FD</sub> =  |                                |                                      | 547 using Ed  | <b>Juation</b> (Exhi | bit 25-12)                         |  |
| V <sub>12</sub> =   | pc/h           |                     |                          |   | V <sub>12</sub> =  |                                |                                      | 023 <b>pc/h</b>                                     |                      |                                    |  |
| V <sub>3</sub> or V <sub>av34</sub>                                   |                | (Equation 25        | -4 or 25-5)              |   | $V_3$ or $V_{av34}$  |                                |                                      | 378 <b>pc/h (Equ</b>                                | ation 25-15          | or 25-16                           |  |
| Is $V_3$ or $V_{av34} > 2,70$   |                |                     |                          |   |  |                                |                                      | Tyes ✓ No   |                      |                                    |  |
| Is $V_3$ or $V_{av34} > 1.5$  | · <del>-</del> |                     |                          |   |  |                                | 5 * V <sub>12</sub> /2               | TYes   ✓ No   |                      |                                    |  |
| If Yes,V <sub>12a</sub> =   | pc/h           | (Equation 25        | -8)                      |   | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18)                 |                                |                                      |   |                      |                                    |  |
| Capacity Che  | ecks           |                     |                          |   | Capacity Checks  |                                |                                      |   |                      |                                    |  |
|   | Actual         | C                   | apacity                  | LOS F?  |  |                                | Actual                               | Ca  | pacity               | LOS F                              |  |
|   |                |                     |                          |   | $V_{F}$  |                                | 6401                                 | Exhibit 25-1  | 4 6780               | No                                 |  |
| $V_{FO}$  |                | Exhibit 25-7        |                          |   | $V_{FO} = V_{F}$   | - $V_R$                        | 5250                                 | Exhibit 25-1  | 4 6780               | No                                 |  |
|   |                |                     |                          |   | V <sub>R</sub>   |                                | 1151                                 | Exhibit 25-3  | 3 2100               | No                                 |  |
| Flow Enterin  | a Merae In     | fluence A           | rea                      |   | <u> </u>   | teri                           | na Dive                              | rge Influen   | ce Area              |                                    |  |
|   | Actual         | 1                   | Desirable                | Violation?  | ,  | -                              | Actual                               | Max Desiral   |                      | Violation                          |  |
| V <sub>R12</sub>  | ĺ              | Exhibit 25-7        |                          |   | V <sub>12</sub>  | _                              | 4023                                 | Exhibit 25-14                                       | 4400:All             | No                                 |  |
| Level of Serv   | rice Deterr    |                     | f not F)                 |   |  |                                |                                      | terminatio  | l                    |                                    |  |
| $D_R = 5.475 + 0$   |                |                     |                          |   |  |                                |                                      | .0086 V <sub>12</sub> - 0.                          | _                    | /                                  |  |
| $D_R = (pc/mi)$   |                | 12                  | A                        |   |  |                                | :/mi/ln)                             | 12  | ט                    |                                    |  |
| **  | it 25-4)       |                     |                          |   |  |                                | bit 25-4)                            |   |                      |                                    |  |
| Speed Deteri  |                |                     |                          |   | Speed D  | •                              |                                      | on  |                      |                                    |  |
|   |                |                     |                          |   | <del></del>  |                                | xhibit 25                            |   |                      |                                    |  |
| M <sub>S</sub> = (Exibit 25-19)                                       |                |                     |                          |   |  | •                              |                                      | •   |                      |                                    |  |
|   | nibit 25-19)   |                     |                          |   | S <sub>R</sub> = 49.5 mph (Exhibit 25-19)                        |                                |                                      |   |                      |                                    |  |
|   | nibit 25-19)   |                     |                          |   | $S_0$ = 56.1 mph (Exhibit 25-19)<br>S = 51.7 mph (Exhibit 25-15) |                                |                                      |   |                      |                                    |  |
|   | nibit 25-14)   |                     |                          |   | S = 51   | ı / mnl                        | a (Lybibit                           | 76-151  |                      |                                    |  |

|   | <u>R</u> AI                | MPS AND                      | RAMP JUNG                                 | <u>STIONS W</u>                      | OKNORE  | <u></u>                                    |                          |                             |                                      |  |  |  |
|---|----------------------------|------------------------------|---|--------------------------------------|---|--|--------------------------|-----------------------------|--------------------------------------|--|--|--|
| General Infor                                     | mation                     |                              |   | Site Infor                           | mation  |  |                          |                             |                                      |  |  |  |
| Analyst<br>Agency or Company<br>Date Performed    | SEB<br>CHA<br>02/1!        |                              | Ju  | eeway/Dir of Tranction<br>risdiction |   | Northbound I-8<br>Exit 4 NB On-F<br>NYSDOT |                          |                             |                                      |  |  |  |
| nalysis Time Period                               | PM                         |                              | An  | nalysis Year                         | :   | 2026 Diamond                               |                          |                             |                                      |  |  |  |
| Project Description                               | Exit 4                     |                              |   |                                      |   |  |                          |                             |                                      |  |  |  |
| nputs   |                            | l                            |   |                                      |   |  |                          |                             |                                      |  |  |  |
| lpstream Adj Ramp<br>▼ Yes                        |                            | Terrain: Level               |   |                                      |   |  |                          | Downstre<br>Ramp            | eam Adj                              |  |  |  |
| Yes I On  |                            |                              |   |                                      |   |  |                          | ☐ Yes                       | ☐ On                                 |  |  |  |
| ■ No     Off                                      |                            |                              |   |                                      |   |  |                          | ✓ No                        | ☐ Off                                |  |  |  |
| up = 1850 f                                       | ft                         |                              |   |                                      |   |  |                          | L <sub>down</sub> =         | ft                                   |  |  |  |
| ' <sub>u</sub> = 980 ve                           | eh/h                       | S                            | <sub>FF</sub> = 56.0 mph<br>Sketch ( s    | show lanes, L <sub>A</sub> ,         | $S_{FR} = 4$<br>$L_{P_1}V_{P_2}V_{A}$           | 0.0 mph                                    |                          | V <sub>D</sub> =            | veh/h                                |  |  |  |
| Conversion to                                     | pc/h Un                    | der Base C                   |   | A                                    | -D' - R' - 1'                                   |  |                          |                             |                                      |  |  |  |
| (pc/h)  | V                          | PHF                          | Terrain                                   | %Truck                               | %Rv   | f <sub>HV</sub>                            | fp                       | v = V/PH                    | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |  |
| reeway  | (Veh/hr)<br>4450           | 0.86                         | Level                                     | 2                                    | 0   | 0.990                                      | 1.00                     | _                           | 5226                                 |  |  |  |
| Ramp  | 930                        | 0.88                         | Level                                     | 1                                    | 0   | 0.995                                      | 1.00                     |                             | 1062                                 |  |  |  |
| UpStream  | 980                        | 0.92                         | Level                                     | 3                                    | 0   | 0.985                                      | 1.00                     | 1081                        |                                      |  |  |  |
| DownStream  |                            |                              |   |                                      |   |  | ĺ                        |                             |                                      |  |  |  |
|   |                            | Merge Areas                  |   |                                      | Fatima at                                       |  | Diverge Are              | eas                         |                                      |  |  |  |
| stimation of                                      | V <sub>12</sub>            |                              |   |                                      | Estimati  | ion of v <sub>12</sub>                     |                          |                             |                                      |  |  |  |
|   |                            |                              | V <sub>12</sub>                           | = V <sub>R</sub> + (V <sub>F</sub>   | - V <sub>R</sub> )P <sub>FD</sub>               |  |                          |                             |                                      |  |  |  |
| L <sub>EQ</sub> = 1617.07 (Equation 25-2 or 25-3) |                            |                              |   |                                      | L <sub>EQ</sub> =                               |  | (Equation                | 25-8 or 25-                 | 9)                                   |  |  |  |
| FM =  | 0.614                      | using Equation               | on (Exhibit 25-5)                         |                                      | P <sub>FD</sub> =                               |  | using Equ                | ıation (Exhibi              | t 25-12)                             |  |  |  |
| 12 =  | 3210                       | •                            |   |                                      | V <sub>12</sub> =                               |  | pc/h                     |                             |                                      |  |  |  |
| or V <sub>av34</sub>                              |                            | pc/h (Equatio                | n 25-4 or 25-                             |                                      | V <sub>3</sub> or V <sub>av34</sub>             |  | pc/h (Equat              | tion 25-15 or 2             | 5-16)                                |  |  |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,70      | 5)<br>0 pc/h? □ ∨a         | e V No                       |   |                                      |   | <sub>34</sub> > 2,700 pc/h                 | ? ☐ Yes ☐                | No                          |                                      |  |  |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5 *     |                            |                              |   |                                      | Is V <sub>3</sub> or V <sub>av3</sub>           | <sub>34</sub> > 1.5 * V <sub>12</sub> /2   | ☐ Yes ☐                  | No                          |                                      |  |  |  |
| Yes, V <sub>12a</sub> =                           |                            | (Equation 25                 | -8)                                       |                                      | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |  |                          |                             |                                      |  |  |  |
| Capacity Che                                      |                            | (=900000-10                  | <u> </u>                                  |                                      | Capacity Checks                                 |  |                          |                             |                                      |  |  |  |
| ,   | Actual                     | Ca                           | pacity                                    | LOS F?                               | 10040000  | Actu                                       | al                       | Capacity                    | LOS F?                               |  |  |  |
|   |                            |                              | , ,                                       | 1                                    | V <sub>F</sub>                                  |  | Exhibit                  |                             |                                      |  |  |  |
| $V_{FO}$  | 6288                       | Exhibit 25-7                 |   | No                                   | $V_{FO} = V_{F}$                                | - V <sub>P</sub>                           | Exhibit                  | 25-14                       |                                      |  |  |  |
| 10  |                            |                              |   |                                      | V <sub>R</sub>                                  |  | Exhibit                  |                             |                                      |  |  |  |
| low Entering                                      | ı Merae In                 | ofluence A                   | rea                                       | <u> </u>                             | -   | terina Div                                 | /erge Infl               |                             | <br>Pa                               |  |  |  |
|   | Actual                     | ή                            | )esirable                                 | Violation?                           |   | Actual                                     |                          | Desirable                   | Violation?                           |  |  |  |
| V <sub>R12</sub>                                  | 4272                       | Exhibit 25-7                 | 4600:All                                  | No                                   | V <sub>12</sub>                                 |  | Exhibit 25-              | _                           |                                      |  |  |  |
| evel of Serv                                      | ice Deterr                 | nination (i                  | f not F)                                  |                                      | <del></del>                                     | Service I                                  | Determina                | ation (if n                 | ot F)                                |  |  |  |
| D <sub>R</sub> = 5.475 +                          | 0.00734 v <sub>R</sub> + 0 | 0.0078 V <sub>12</sub> - 0.0 | 0627 L <sub>A</sub>                       |                                      |   | $D_{R} = 4.252 -$                          | + 0.0086 V <sub>12</sub> | - 0.009 L <sub>D</sub>      |                                      |  |  |  |
| O <sub>R</sub> = 30.1 (pc                         | /mi/ln)                    |                              |   |                                      | $D_R = (p$                                      | c/mi/ln)                                   |                          |                             |                                      |  |  |  |
| OS = D (Exhib                                     |                            |                              |   |                                      | LOS = (E  | xhibit 25-4)                               |                          |                             |                                      |  |  |  |
| Speed Detern                                      | nination                   |                              |   |                                      | Speed D   | Petermina                                  | tion                     |                             |                                      |  |  |  |
| M <sub>S</sub> = 0.496 (Exibit 25-19)             |                            |                              |   |                                      | $D_s = (E)$                                     | xhibit 25-19)                              |                          |                             |                                      |  |  |  |
| S <sub>R</sub> = 49.1 mph (Exhibit 25-19)         |                            |                              |   |                                      | S <sub>R</sub> = mph (Exhibit 25-19)            |  |                          |                             |                                      |  |  |  |
| <sub>R</sub> = 49.1 mph (                         | ,                          |                              | S <sub>0</sub> = 50.5 mph (Exhibit 25-19) |                                      |   |  |                          | $S_0 = mph$ (Exhibit 25-19) |                                      |  |  |  |
|   |                            |                              |   |                                      | S <sub>0</sub> = m <sub>l</sub>                 | oh (Exhibit 25-                            | 19)                      |                             |                                      |  |  |  |

|  |                            | RAMPS                    | S AND RAI                | <b>IP JUNCTI</b>   | ONS WO  | RKS                                       | HEET              |   |                     |                                     |  |
|--|----------------------------|--------------------------|--------------------------|--|---|---|-------------------|---|---------------------|-------------------------------------|--|
| General Infor  | mation                     |                          |                          | Site Infor   |   |   |                   |   |                     |                                     |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | SEB<br>CHA<br>02/1!<br>PM  |                          |                          | Freeway/Dir of Tr<br>Junction<br>Jurisdiction<br>Analysis Year | avel [  | Exit 5 N                                  |                   |   |                     |                                     |  |
| Project Description  | Exit 4                     |                          |                          |  |   |   |                   |   |                     |                                     |  |
| Inputs   |                            | Terrain: Leve            |                          |  |   |   |                   |   | - ·                 | A 1:                                |  |
| Upstream Adj Ramp  |                            | TCHain. Ecve             |                          |  |   |   |                   |   | Downstrea<br>Ramp   | m Aaj                               |  |
| ✓ Yes  ✓ On  |                            |                          |                          |  |   |   |                   |   | ☐ Yes               | On                                  |  |
| □ No □ Off   |                            |                          |                          |  |   |   |                   |   | ✓ No                | Off                                 |  |
|  |                            |                          |                          |  |   |   |                   |   |                     | ft                                  |  |
| L <sub>up</sub> = 7810 1   | rt                         | 5                        | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 3                             | 5 0 mr                                    | ıh                |   | L <sub>down</sub> = | IL                                  |  |
| V <sub>u</sub> = 930 νε  | eh/h                       |                          | • •                      | ( show lanes, L <sub>A</sub>                                   |   | 5.0 mp                                    | '''               |   | V <sub>D</sub> =    | veh/h                               |  |
| Conversion to  | pc/h Und                   | der Base (               |                          | · A  | D. K. I.  |   |                   |   |                     |                                     |  |
| (pc/h)   | V                          | PHF                      | Terrain                  | %Truck   | %Rv   |   | f <sub>HV</sub>   | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>LIV</sub> x f <sub>n</sub> |  |
| Freeway  | (Veh/hr)<br>5700           | 0.86                     | Level                    | 2  | 0   | 4   | 990               | 1.00  | 66                  | ••• г                               |  |
| Ramp   | 420                        | 0.92                     | Level                    | 3  | 0   | <del></del>                               | 985               | 1.00  | 463                 |                                     |  |
| UpStream   | 930                        | 0.88                     | Level                    | 1  | 0   | _   | 995               | 1.00  | 1062                |                                     |  |
| DownStream   |                            |                          |                          |  |   |   |                   |   |                     |                                     |  |
| <b>5</b> -444  |                            | Merge Areas              |                          |  | <b>F</b> - 45 45                                |   |                   | Diverge Areas                                       |                     |                                     |  |
| Estimation of  | V <sub>12</sub>            |                          |                          |  | Estimati  | on c                                      |                   |   |                     |                                     |  |
|  | $V_{12} = V_F$             | (P <sub>FM</sub> )       |                          |  |   |   | V <sub>12</sub> = | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | R)P <sub>FD</sub>   |                                     |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                              |                            |                          |                          |  | L <sub>EQ</sub> =                               |   | 5                 | 596.13 (Equati                                      | on 25-8 or          | 25-9)                               |  |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)                        |                            |                          |                          |  | P <sub>FD</sub> =                               |   |                   | .571 using Eq                                       | uation (Exh         | ibit 25-12)                         |  |
| V <sub>12</sub> =  | pc/h                       |                          |                          |  | V <sub>12</sub> =                               |   |                   | 023 pc/h  |                     |                                     |  |
| V <sub>3</sub> or V <sub>av34</sub>                                    |                            | (Equation 25             | -4 or 25-5)              |  | V <sub>3</sub> or V <sub>av34</sub>             | 0.7                                       |                   | 671 pc/h (Equ                                       | ation 25-15         | or 25-16                            |  |
| Is $V_3$ or $V_{av34} > 2,70$  |                            |                          |                          |  |   |   |                   | ☐ Yes ☑ No  |                     |                                     |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *                         | · <del>-</del>             |                          | 0)                       |  |   |   |                   | Yes No  | 2F 10\              |                                     |  |
| If Yes,V <sub>12a</sub> =<br><b>Capacity Che</b>                       |                            | (Equation 25             | -0)                      |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |   |                   |   |                     |                                     |  |
| Сараспу спе  | Actual                     | T C                      | apacity                  | LOS F?   | Capacity Checks   Actual   Capacity             |   |                   |   |                     | LOS F                               |  |
|  | netdai                     | Ĭ                        | apacity                  | 2031.  | V <sub>F</sub>                                  |   | 6694              | Exhibit 25-1  | T .                 | No                                  |  |
| V <sub>FO</sub>  |                            | Exhibit 25-7             |                          |  | $V_{FO} = V_{F}$                                | - V <sub>5</sub>                          | 6231              | Exhibit 25-1  | _                   | No                                  |  |
| FO   |                            |                          |                          |  | V <sub>R</sub>                                  | K   | 463               | Exhibit 25-3  |                     | No                                  |  |
| Flow Entering  | Morgo In                   | fluence A                | ro2                      |  |   | torir                                     |                   | erge Influen  |                     | 110                                 |  |
| . 10W Entering   | Actual                     | 1                        | Desirable                | Violation?   | 1 13W LII                                       | -   | Actual            | Max Desirat   |                     | Violation                           |  |
| V <sub>R12</sub>   |                            | Exhibit 25-7             |                          |  | V <sub>12</sub>                                 |   | 1023              | Exhibit 25-14                                       | 4400:All            | No                                  |  |
| Level of Serv  | ice Detern                 | nination (i              | f not F)                 |  |   | Ser                                       | vice De           | eterminatio   | n (if not           | F)_                                 |  |
| $D_R = 5.475 + 0.0$  | 00734 v <sub>R</sub> +     | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |  | [   | O <sub>R</sub> = 4                        | 1.252 + 0         | 0.0086 V <sub>12</sub> - 0.                         | 009 L <sub>D</sub>  |                                     |  |
| D <sub>R</sub> = (pc/mi/   | n)                         |                          |                          |  | D <sub>R</sub> = 36                             | .6 (pc                                    | /mi/ln)           |   |                     |                                     |  |
| LOS = (Exhibi  | t 25-4)                    |                          |                          |  | LOS = E (Exhibit 25-4)                          |   |                   |   |                     |                                     |  |
| Speed Detern   | nination                   |                          |                          |  | Speed D   | eter                                      | minati            | on  |                     |                                     |  |
| M <sub>S</sub> = (Exibit 25-19)  |                            |                          |                          |  | D <sub>s</sub> = 0.470 (Exhibit 25-19)          |   |                   |   |                     |                                     |  |
| S <sub>R</sub> = mph (Exhibit 25-19)                                   |                            |                          |                          |  | S <sub>R</sub> = 49.4 mph (Exhibit 25-19)       |   |                   |   |                     |                                     |  |
| ⊳ <sub>R</sub> = mpn ( <b>Exn</b>                                      |                            |                          |                          |  |   | S <sub>0</sub> = 54.9 mph (Exhibit 25-19) |                   |   |                     |                                     |  |
| S <sub>0</sub> = mph (Exh  | ibit 25-19)<br>ibit 25-14) |                          |                          |  | $S_0 = 54$                                      | .9 mph                                    | (Exhibit          | 25-19)  |                     |                                     |  |

|   |   | RAMP                     | S AND RAM                | IP JUNCTI   | ONS WO   | RKS   | HEET                                      |                            |                     |                    |  |  |
|---|---|--------------------------|--------------------------|---|--|---|---|----------------------------|---------------------|--------------------|--|--|
| General Info  | rmation                                 |                          |                          | Site Infor  |  |   |   |                            |                     |                    |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio                     | SEB<br>/ CHA<br>02/15<br>d PM           |                          | J                        | reeway/Dir of Tr<br>unction<br>urisdiction<br>Analysis Year | ravel S  | Southb<br>Exit 2V<br>NYSD(<br>2026 D        | V Off                                     |                            |                     |                    |  |  |
| Project Description   | Exit 4                                  |                          |                          |   |  |   |   |                            |                     |                    |  |  |
| Inputs  |   | Terrain: Leve            | <u> </u>                 |   |  |   |   | 1                          | D                   | A al:              |  |  |
| Upstream Adj Ramp   |   |                          | •                        |   |  |   |   |                            | Downstrea<br>Ramp   |                    |  |  |
| ✓ No ☐ O  |   |                          |                          |   |  |   |   |                            | ✓ Yes               | ☑ On               |  |  |
|   | .,                                      |                          |                          |   |  |   |   |                            | □ No                | ☐ Off              |  |  |
| L <sub>up</sub> = ft  |   | S                        | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4  | 0.0 mp                                      | h   |                            | L <sub>down</sub> = | 1300 ft            |  |  |
| $V_u = veh/I$   | า                                       |                          | Sketch (                 | ( show lanes, L <sub>A</sub>                                | $L_{D'}V_{R'}V_{f}$  |   |   |                            | V <sub>D</sub> =    | 710 veh/h          |  |  |
| Conversion t  | to pc/h Und                             | der Base (               | Conditions               |   |  |   |   |                            |                     |                    |  |  |
| (pc/h)  | V<br>(Veh/hr)                           | PHF                      | Terrain                  | %Truck  | %Rv  |   | ${\sf f}_{\sf HV}$                        | f <sub>p</sub>             | v = V/PHF           | $x f_{HV} x f_{p}$ |  |  |
| Freeway   | 3950                                    | 0.92                     | Level                    | 2   | 0  | 0   | 990                                       | 1.00                       | 43                  | 36                 |  |  |
| Ramp  | 560                                     | 0.92                     | Level                    | 2   | 0  | 0   | .990                                      | 1.00                       | 6                   | 15                 |  |  |
| UpStream<br>DownStream  | 710                                     | 0.00                     | Level                    |   |  | +   | 000                                       | 1.00                       | 7.                  | 70                 |  |  |
| DownStream  | 710                                     | 0.92<br>Merge Areas      | Level                    | 2   | 0  | 0   | 990                                       | 1.00<br>Diverge Areas      | 1.                  | 79                 |  |  |
| Estimation o  |   | ivici ye Ai cas          |                          |   | Estimati   | on c  |   | Diverge Areas              |                     |                    |  |  |
|   |   | (D )                     |                          |   |  |   |   | \/ . (\/ \/                | \D                  |                    |  |  |
|   | $V_{12} = V_F$                          |                          | 05.0\                    |   | L <sub>FO</sub> =  |   |   | $= V_R + (V_F - V_F)$      |                     |                    |  |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3) P <sub>FM</sub> = using Equation (Exhibit 25-5) |   |                          |                          |   |  |   |   | Equation 25-8              |                     |                    |  |  |
| P <sub>FM</sub> =   | _                                       | Equation (E              | XNIDII 25-5)             |   | P <sub>FD</sub> =  |   |   | .623 using Eq              | uation (Exr         | iibit 25-12)       |  |  |
| V <sub>12</sub> =   | pc/h                                    | /F // 05                 | . 4 . 05 5)              |   | V <sub>12</sub> =  |   |   | 934 pc/h                   |                     |                    |  |  |
| V <sub>3</sub> or V <sub>av34</sub>   |   | (Equation 25             | -4 or 25-5)              |   | $V_3$ or $V_{av34}$ 1402 pc/h (Equation 25-15 or 25-16 Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\checkmark$ Yes $\checkmark$ No |   |   |                            |                     |                    |  |  |
| Is $V_3$ or $V_{av34} > 2.79$   |   |                          |                          |   |  |   |   |                            |                     |                    |  |  |
| Is $V_3$ or $V_{av34} > 1.5$  | ·=                                      |                          | . 0/                     |   |  |   |   | Yes Mo                     | OF 40\              |                    |  |  |
| If Yes,V <sub>12a</sub> =   |   | (Equation 25             | )-8)                     |   | If Yes,V <sub>12a</sub> =  |   |   | oc/h (Equation             | 25-18)              |                    |  |  |
| Capacity Che  | 1                                       | T                        | apacity                  | LOS F?  | Capacity   | Ch  |   |                            | pacity              | LOS F              |  |  |
|   | Actual                                  |                          | араспу                   | LUST  | V <sub>F</sub>   |   | Actual<br>4336                            | Exhibit 25-1               | T -                 | No                 |  |  |
| V   |   | Cybibit 2F 7             |                          |   |  | - \/  |   |                            | +                   |                    |  |  |
| V <sub>FO</sub>   |   | Exhibit 25-7             |                          |   | $V_{FO} = V_{F}$   | *R  | 3721                                      | Exhibit 25-1               | _                   | No<br>No           |  |  |
|   | 14 .                                    | <u> </u>                 |                          |   | V <sub>R</sub>   | 4   | 615                                       | Exhibit 25-3               |                     | No                 |  |  |
| Flow Enterin  | <b>g Merge In</b><br>Actual             | ľ                        | <b>rea</b><br>Desirable  | Violation?  | riow En  | 1   | <b>ig Dive</b><br>Actual                  | rge Influen<br>Max Desirab |                     | Violation          |  |  |
| V <sub>R12</sub>  | Actual                                  | Exhibit 25-7             | DESII ADIE               | viola(IOI1?   | V <sub>12</sub>  | _   | 2934                                      | Exhibit 25-14              | 4400:All            | No                 |  |  |
| Level of Serv   | ice Detern                              |                          | if not E)                | 1   |  |   |   | eterminatio                |                     | <u> </u>           |  |  |
| $D_{R} = 5.475 + 0$   |   |                          |                          |   |  |   |   | .0086 V <sub>12</sub> - 0. | •                   | <i>'</i>           |  |  |
| • • •   | • | 0.0070 v <sub>12</sub> - | 0.00027 L <sub>A</sub>   |   |  |   |   | .0000 v <sub>12</sub> - 0. | 003 LD              |                    |  |  |
| $D_R = (pc/mi)$<br>LOS = (Exhib   | •                                       |                          |                          |   | 1 "  |   | /mi/ln)                                   |                            |                     |                    |  |  |
| LOS = (Exhibit 25-4)  Speed Determination   |   |                          |                          |   |  | LOS = C (Exhibit 25-4)  Speed Determination |   |                            |                     |                    |  |  |
|   |   |                          |                          |   | <del>` '</del>   |   |   |                            |                     |                    |  |  |
| M <sub>S</sub> = (Exibit 2  |   |                          |                          |   | J.   | •   | xhibit 25                                 | •                          |                     |                    |  |  |
| S <sub>R</sub> = mph (Exhibit 25-19)  |   |                          |                          |   |  | S <sub>R</sub> = 50.1 mph (Exhibit 25-19)   |   |                            |                     |                    |  |  |
|   | S <sub>0</sub> = mph (Exhibit 25-19)    |                          |                          |   |  |   | S <sub>0</sub> = 59.9 mph (Exhibit 25-19) |                            |                     |                    |  |  |
| S <sub>0</sub> = mph (Exi   | nibit 25-19)<br>nibit 25-14)            |                          |                          |   |  |   | n (Exhibit<br>n (Exhibit                  |                            |                     |                    |  |  |

|  |                | IV-VIAII A               | O AND ITAI               | IP JUNCTI   |  | 11110                                       | ···                                   |   |                     |                                    |  |
|--|----------------|--------------------------|--------------------------|---|--|---|---------------------------------------|---|---------------------|------------------------------------|--|
| General Info   | rmation        |                          |                          | Site Infor  |  |   |                                       |   |                     |                                    |  |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric                       | 02/1!          |                          | J                        | reeway/Dir of Tr<br>unction<br>urisdiction<br>analysis Year | 1  | Exit 4 :<br>NYSD                            | oound I-87<br>SB Off<br>OT<br>Diamond |   |                     |                                    |  |
| Project Description  | Exit 4         |                          |                          |   |  |   |                                       |   |                     |                                    |  |
| Inputs   |                |                          |                          |   |  |   |                                       |   |                     |                                    |  |
| Upstream Adj Ramı  |                | Terrain: Leve            |                          |   |  |   |                                       |   | Downstrea<br>Ramp   | m Adj                              |  |
| ☐ Yes ☐ O  |                |                          |                          |   |  |   |                                       |   | ✓ Yes               | ✓ On                               |  |
| ™ No □ O   | ff             |                          |                          |   |  |   |                                       |   | □ No                | ☐ Off                              |  |
| L <sub>up</sub> = ft   |                | 9                        | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4  | 0 0 mr                                      | nh.                                   |   | L <sub>down</sub> = | 1820 ft                            |  |
| V <sub>u</sub> = veh/  |                |                          | Sketch (                 | ( show lanes, L <sub>A</sub> ,                              |  | .0.0 111                                    | JII                                   |   | V <sub>D</sub> =    | 1310 veh                           |  |
| Conversion   | to pc/h Un     | der Base (               | Conditions               |   |  |   |                                       |   |                     |                                    |  |
| (pc/h)   | V<br>(Veh/hr)  | PHF                      | Terrain                  | %Truck  | %Rv  |   | $f_{HV}$                              | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 3800           | 0.92                     | Level                    | 2   | 0  | 0   | .990                                  | 1.00  | 417                 | 72                                 |  |
| Ramp   | 1040           | 0.92                     | Level                    | 2   | 0  | 0   | .990                                  | 1.00  | 114                 | 12                                 |  |
| UpStream   | 1210           | 0.02                     | Lovel                    | 1   | 0  | _   | 000                                   | 1.00  | 14                  | 7                                  |  |
| DownStream   | 1310           | 0.93<br>Merge Areas      | Level                    | 4   | 0  | 0   | .980                                  | 1.00<br>Diverge Areas                               | 143                 | 37                                 |  |
| Estimation of  |                | werge 711 cus            |                          |   | Estimati   | ion c                                       |                                       | biverge rireds                                      |                     |                                    |  |
|  |                | (D )                     |                          |   |  |   |                                       | \/ . (\/ \/   | \D                  |                                    |  |
| ı  | $V_{12} = V_F$ |                          | OF 0\                    |   | L <sub>EQ</sub> =  |   |                                       | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> |                     |                                    |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)  P <sub>FM</sub> = using Equation (Exhibit 25-5) |                |                          |                          |   |  |   |                                       | Equation 25-8                                       |                     | :L:: OF 10\                        |  |
| P <sub>FM</sub> =  | _              | Equation (               | XIIIDIL 20-0)            |   | P <sub>FD</sub> =  |   |                                       | .603 using Ed                                       | luation (Exil       | IDIL 25-12)                        |  |
| V <sub>12</sub> =<br>V <sub>3</sub> or V <sub>av34</sub>                                   | pc/h           | (Equation 25             | 4 or 25 5)               |   | $V_{12} = V_3 \text{ or } V_{av34}$  |   |                                       | 970 pc/h  | ation OF 15         | - OF 40                            |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7   |                | (Equation 25             | 1-4 01 25-5)             |   | $V_3$ or $V_{av34}$ 1202 pc/h (Equation 25-15 or 25-16 Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |   |                                       |   |                     |                                    |  |
| Is $V_3$ or $V_{av34} > 2,7$   |                |                          |                          |   |  |   |                                       | Yes No  |                     |                                    |  |
| If Yes,V <sub>12a</sub> =  | · <del>-</del> | S I NO<br>(Equation 25   | : 0\                     |   | If Yes, $V_{12a} =$  |   |                                       | oc/h (Equation                                      | 25 10)              |                                    |  |
| Capacity Ch  |                | (Equation 23             | <del>0)</del>            |   |  |   |                                       | ochi (Equation                                      | 123-10)             |                                    |  |
| Capacity Cit   | Actual         | Г <u>с</u>               | apacity                  | LOS F?  | Capacity   | y Cii                                       | Actual                                | Ca  | pacity              | LOS F?                             |  |
|  | Actual         | <del>† ĭ</del>           | араспу                   | LUST:   | V <sub>F</sub>   |   | 4172                                  | Exhibit 25-1  | · ·                 | No                                 |  |
| V  |                | Exhibit 25-7             |                          |   | -  | \/  |                                       |   |                     | +                                  |  |
| V <sub>FO</sub>  |                | EXHIBIT 23-7             |                          |   | $V_{FO} = V_{F}$   | - v <sub>R</sub>                            | 3030                                  | Exhibit 25-1  | <del>-</del>        | No                                 |  |
| <u></u>  |                |                          |                          |   | V <sub>R</sub>   |   | 1142                                  | Exhibit 25-3  |                     | No                                 |  |
| Flow Enterin   | 1              | 1                        |                          | \I':=1=#' \ \O  | Flow En  | 1   |                                       | rge Influen   |                     | \I;=1=1' C                         |  |
| V  | Actual         | Exhibit 25-7             | Desirable                | Violation?  | \/   | _   | Actual                                | Max Desirat   |                     | Violation?                         |  |
| V <sub>R12</sub><br>Level of Serv  | vice Detarr    |                          | if not El                |   | V <sub>12</sub>  |   | 2970                                  | Exhibit 25-14                                       | 4400:All            | No<br>E)                           |  |
|  |                |                          |                          |   | +  |   |                                       |   |                     | )                                  |  |
| $D_{R} = 5.475 + 0$  |                | 0.0076 V <sub>12</sub> - | 0.00021 L <sub>A</sub>   |   |  | • • •                                       |                                       | 0.0086 V <sub>12</sub> - 0.                         | oos rD              |                                    |  |
| D <sub>R</sub> = (pc/mi/ln)  |                |                          |                          |   |  | $D_{R} = 23.5 \text{ (pc/mi/ln)}$           |                                       |   |                     |                                    |  |
| LOS = (Exhibit 25-4)  Speed Determination  |                |                          |                          |   |  | LOS = C (Exhibit 25-4)  Speed Determination |                                       |   |                     |                                    |  |
|  |                |                          |                          |   | <del>'                                    </del>   |   |                                       |   |                     |                                    |  |
| M <sub>S</sub> = (Exibit 2   |                |                          |                          |   | . "  | ,   | xhibit 25                             | *   |                     |                                    |  |
|  | hibit 25-19)   |                          |                          |   | 1  | -   | n (Exhibit                            |   |                     |                                    |  |
| S <sub>0</sub> = mph (Exhibit 25-19)   |                |                          |                          |   | $S_0 = 60$   | ).6 mpl                                     | n (Exhibit                            | 25-19)  |                     |                                    |  |
| S = mph (Exhibit 25-14)  |                |                          |                          |   |  |   | n (Exhibit                            |   |                     |                                    |  |

|   |                                  | MPS AND                       | RAMP JUN                             |   |   | <u>:EI                                    </u>                      |                                      |                     |                                      |  |  |
|---|----------------------------------|-------------------------------|--------------------------------------|---|---|---|--------------------------------------|---------------------|--------------------------------------|--|--|
| General Infor   | mation                           |                               |                                      | Site Infor                                  | mation  |   |                                      |                     |                                      |  |  |
| Analyst<br>Agency or Company<br>Date Performed                            | SEB<br>CHA<br>02/15              |                               | Jı                                   | reeway/Dir of Tra<br>unction<br>urisdiction | avel Southbound I-87 Exit 4 SB On-Ramp NYSDOT   |   |                                      |                     |                                      |  |  |
| Analysis Time Period  |                                  | JI 12                         |                                      | nalysis Year                                |   | 2026 Diamond  |                                      |                     |                                      |  |  |
| Project Description   |                                  |                               |                                      |   |   | Lozo Biamona  |                                      |                     |                                      |  |  |
| Inputs  |                                  |                               |                                      |   |   |   |                                      |                     |                                      |  |  |
| Jpstream Adj Ramp   |                                  | Terrain: Level                |                                      |   |   |   |                                      | Downstre<br>Ramp    | am Adj                               |  |  |
| Yes On  |                                  |                               |                                      |   |   |   |                                      | ☐ Yes               | □ On                                 |  |  |
| □ No     Off  | :                                |                               |                                      |   |   |   |                                      | ™ No                | ☐ Off                                |  |  |
| - <sub>up</sub> = 1820  | ft                               |                               |                                      |   |   |   |                                      | L <sub>down</sub> = | ft                                   |  |  |
| $V_{u} = 1040 \text{ V}$  | reh/h                            | S                             | <sub>FF</sub> = 56.0 mph<br>Sketch ( | show lanes, L <sub>A</sub> ,                | $S_{FR} = 4$  | 0.0 mph   |                                      | V <sub>D</sub> =    | veh/h                                |  |  |
| Conversion to   | o pc/h Und                       | l<br>der Base C               |                                      | Show lanes, LA                              | D' R' f'  |   |                                      |                     |                                      |  |  |
| (pc/h)  | V<br>(Veh/hr)                    | PHF                           | Terrain                              | %Truck                                      | %Rv   | f <sub>HV</sub>   | f <sub>p</sub>                       | v = V/PH            | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway   | 2750                             | 0.92                          | Level                                | 2   | 0   | 0.990   | 1.00                                 | <del> </del>        | 3019                                 |  |  |
| Ramp  | 1310                             | 0.93                          | Level                                | 4   | 0   | 0.980   | 1.00                                 | 1                   | 1437                                 |  |  |
| UpStream  | 1040                             | 0.92                          | Level                                | 2   | 0   | 0.990   | 1.00                                 |                     | 1142                                 |  |  |
| DownStream  |                                  |                               |                                      |   |   |   |                                      |                     |                                      |  |  |
|   |                                  | Merge Areas                   |                                      |   |   |   | Diverge Area                         | as                  |                                      |  |  |
| Estimation of   | v <sub>12</sub>                  |                               |                                      |   | Estimation of v <sub>12</sub>   |   |                                      |                     |                                      |  |  |
|   | V <sub>12</sub> = V <sub>F</sub> | (P <sub>FM</sub> )            |                                      |   |   | \/  | = V <sub>R</sub> + (V <sub>F</sub> - | V_)P                |                                      |  |  |
| <sub>EQ</sub> = 1222.80 (Equation 25-2 or 25-3)                           |                                  |                               |                                      |   |   | v 12  | (Equation:                           |                     | 0)                                   |  |  |
| P <sub>FM</sub> =   |                                  |                               | on (Exhibit 25-5)                    | )   | L <sub>EQ</sub> =   |   |                                      |                     |                                      |  |  |
| '12 =   | 1854                             |                               | ,                                    | ,   | P <sub>FD</sub> =   |   |                                      | ation (Exhibit      | . 20-12)                             |  |  |
|   |                                  | pc/h (Equatio                 | n 25-4 or 25-                        |   | $V_{12} = pc/h$<br>$V_3$ or $V_{av34}$ pc/h (Equation 25-15 or 25-16)                             |   |                                      |                     |                                      |  |  |
| or V <sub>av34</sub>  | 5)                               |                               |                                      |   | $V_3$ or $V_{av34}$ pc/h (Equation 25-15 or 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No |   |                                      |                     |                                      |  |  |
| s $V_3$ or $V_{av34} > 2,70$  |                                  |                               |                                      |   |   |   |                                      |                     |                                      |  |  |
| Is $V_3$ or $V_{av34} > 1.5$  | V <sub>12</sub> /2               | s 🗹 No                        |                                      |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No  |   |                                      |                     |                                      |  |  |
| f Yes,V <sub>12a</sub> =  | pc/h                             | (Equation 25-                 | 8)                                   |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)   |   |                                      |                     |                                      |  |  |
| Capacity Che  | cks                              |                               |                                      |   | Capacit   | y Checks  |                                      |                     |                                      |  |  |
|   | Actual                           | Ca                            | pacity                               | LOS F?                                      |   | Actu  | al                                   | Capacity            | LOS F                                |  |  |
|   |                                  |                               |                                      |   | V <sub>F</sub>  |   | Exhibit 2                            | 25-14               |                                      |  |  |
| $V_{FO}$  | 4456                             | Exhibit 25-7                  |                                      | No  | $V_{FO} = V_{F}$  | - V <sub>R</sub>  | Exhibit 2                            | 25-14               |                                      |  |  |
| -   |                                  |                               |                                      |   | V <sub>R</sub>  |   | Exhibit 2                            | 25-3                |                                      |  |  |
| low Entering  | n Merge In                       | fluence Ai                    | <br>'ea                              |   | Flow Entering Diverge Influence Area  |   |                                      |                     |                                      |  |  |
|   | Actual                           |                               | esirable                             | Violation?                                  |   | Actual  |                                      | esirable            | Violation?                           |  |  |
| V <sub>R12</sub>  | 3291                             | Exhibit 25-7                  | 4600:All                             | No  | V <sub>12</sub>   |   | Exhibit 25-14                        |                     |                                      |  |  |
| Level of Serv   | ice Detern                       | nination (ii                  | not F)                               |   | <del>}</del>  | Service L   | Determina                            |                     | ot F)                                |  |  |
|   |                                  | 0.0078 V <sub>12</sub> - 0.00 |                                      |   | 1   |   | 0.0086 V <sub>12</sub>               |                     |                                      |  |  |
| ) <sub>R</sub> = 22.3 (pc   |                                  | 12                            | Λ                                    |   |   | c/mi/ln)  | 12                                   | D                   |                                      |  |  |
| LOS = C (Exhibit 25-4)  |                                  |                               |                                      |   |   | LOS = (Exhibit 25-4)  |                                      |                     |                                      |  |  |
| Speed Detern  | nination                         |                               |                                      |   | Speed D   | Determina   | tion                                 |                     |                                      |  |  |
| M <sub>S</sub> = 0.321 (Exil  |                                  |                               |                                      |   | <del>                                     </del>  | xhibit 25-19)   |                                      |                     |                                      |  |  |
| $S_{R}$ = 51.5 mph (Exhibit 25-19)  |                                  |                               |                                      |   | 1   | ph (Exhibit 25-1  | 19)                                  |                     |                                      |  |  |
| .,  |                                  |                               |                                      |   |   | ph (Exhibit 25-1  |                                      |                     |                                      |  |  |
| S <sub>0</sub> = 53.6 mph (Exhibit 25-19)<br>S = 52.0 mph (Exhibit 25-14) |                                  |                               |                                      |   |   | $S_0 = \text{mpn (Exhibit 25-19)}$ $S = \text{mph (Exhibit 25-15)}$ |                                      |                     |                                      |  |  |
| S = 52.0  mph (   | EXPIDIT 75-141                   |                               |                                      |   |   | DIT (EXIJUIN 77)-   |                                      |                     |                                      |  |  |

|   | RA                                     | MPS AND                                 | KAMP JUNG                | STICING W                    | OKKSHL  | <u></u>                            |                |  |                                       |  |  |
|---|--|---|--------------------------|------------------------------|---|------------------------------------|----------------|--|---------------------------------------|--|--|
| General Info  | ormation                               |   |                          | Site Infor                   | mation  |                                    |                |  |                                       |  |  |
| Analyst SEB Agency or Company CHA Date Performed 02/15/12 Analysis Time Period PM |  |   |                          | avel S<br>E<br>N             | Southbound I-<br>Exit 5 SB On-F<br>NYSDOT<br>2026 Diamond   |                                    |                |  |                                       |  |  |
| Project Description   | n Exit 4                               |   |                          |                              |   |                                    |                |  |                                       |  |  |
| Inputs  |  | <del>-</del>                            |                          |                              |   |                                    |                |  |                                       |  |  |
| Jpstream Adj Ran  |  | Terrain: Leve                           |                          |                              |   |                                    |                | Downstr<br>Ramp  | eam Adj                               |  |  |
| □Yes □  |  |   |                          |                              |   |                                    |                | ✓ Yes  | □ On                                  |  |  |
| ☑ No  | ווכ                                    |   |                          |                              |   |                                    |                | □ No   | ✓ Off                                 |  |  |
| - <sub>up</sub> = ft  |  | S                                       | <sub>FF</sub> = 56.0 mph |                              | S <sub>FR</sub> = 40  | 0.0 mph                            |                | L <sub>down</sub> =  | 6100 ft                               |  |  |
| / <sub>u</sub> = veh  | /h                                     |   | Sketch ( s               | show lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$   |                                    |                | $V_D =$  | 1040 veh/h                            |  |  |
| Conversion  | to pc/h Un                             | der Base (                              | Conditions               |                              |   |                                    |                | •  |                                       |  |  |
| (pc/h)  | V<br>(Veh/hr)                          | PHF                                     | Terrain                  | %Truck                       | %Rv   | f <sub>HV</sub>                    | f <sub>p</sub> | v = V/PH   | IF x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway   | 3150                                   | 0.92                                    | Level                    | 2                            | 0   | 0.990                              | 1.00           |  | 3458                                  |  |  |
| Ramp  | 670                                    | 0.87                                    | Level                    | 1                            | 0   | 0.995                              | 1.00           |  | 774                                   |  |  |
| UpStream<br>DownStream  | 1040                                   | 0.92                                    | Level                    | 2                            | 0   | 0.990                              | 1.00           |  | 1142                                  |  |  |
| Downsticani   |  | Merge Areas                             | Level                    |                              |   | 0.770                              | Diverge /      | Areas  | 1142                                  |  |  |
| Estimation  |  | <u> </u>                                |                          |                              | Estimation of v <sub>12</sub>   |                                    |                |  |                                       |  |  |
|   | V <sub>12</sub> = V <sub>F</sub>       | (P <sub>EM</sub> )                      |                          |                              | 1   |                                    |                | / \/\D   |                                       |  |  |
| - <sub>EQ</sub> =   |  | • | 25-2 or 25-3)            |                              | -   | V 12                               |                | ′ <sub>F</sub> - V <sub>R</sub> )P <sub>FD</sub><br>on 25-8 or 25- | 0)                                    |  |  |
| P <sub>FM</sub> =   |  |   | on (Exhibit 25-5)        |                              | L <sub>EQ</sub> =   |                                    |                |  |                                       |  |  |
| / <sub>12</sub> =   | 2123                                   |   | OTT (EXTENDED 20 0)      |                              | P <sub>FD</sub> =   |                                    | _              | quation (Exhib   | 1[ 25-12)                             |  |  |
|   |  | •                                       | on 25-4 or 25-           |                              | V <sub>12</sub> =   |                                    | pc/h           | OF 4E 0  | F 4 ( )                               |  |  |
| V <sub>3</sub> or V <sub>av34</sub>   | 5)                                     |   |                          |                              | $V_3$ or $V_{av34}$ pc/h (Equation 25-15 or 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No |                                    |                |  |                                       |  |  |
| Is $V_3$ or $V_{av34} > 2$  |  |   |                          |                              | Is $V_3$ or $V_{av34} > 2.700$ pc/nr: Yes No  |                                    |                |  |                                       |  |  |
| Is $V_3$ or $V_{av34} > 1$  | ·=                                     |   |                          |                              |   |                                    |                |  |                                       |  |  |
| f Yes,V <sub>12a</sub> =  | <u>.</u>                               | (Equation 25                            | -8)                      |                              | If Yes,V <sub>12a</sub> =   |                                    |                | quation 25-18  | )                                     |  |  |
| Capacity Cl   | necks                                  |   |                          |                              | Capacity  | / Checks                           |                |  | ,                                     |  |  |
|   | Actual                                 | C                                       | apacity                  | LOS F?                       |   | Actı                               |                | Capacity   | LOS F?                                |  |  |
|   |  |   |                          |                              | V <sub>F</sub>  |                                    | Exhi           | bit 25-14  |                                       |  |  |
| $V_{FO}$  | 4232                                   | Exhibit 25-7                            |                          | No                           | $V_{FO} = V_{F}$  | · V <sub>R</sub>                   | Exhi           | bit 25-14  |                                       |  |  |
|   |  |   |                          |                              | V <sub>R</sub>  |                                    | Exhi           | bit 25-3   |                                       |  |  |
| Flow Enteri   | ng Merge Ir                            |   |                          |                              | Flow En   | tering Di                          |                | fluence Ar   | -                                     |  |  |
|   | Actual                                 |   | Desirable                | Violation?                   | ļ   | Actual                             |                | x Desirable  | Violation?                            |  |  |
| V <sub>R12</sub>  | 2897                                   | Exhibit 25-7                            | 4600:All                 | No                           | V <sub>12</sub>   | <u> </u>                           | Exhibit 2      |  | <u></u>                               |  |  |
| Level of Ser  |  |   |                          |                              |   |                                    |                | nation (if n   | ot F)                                 |  |  |
| •   | + 0.00734 V <sub>R</sub> +             | 0.0078 V <sub>12</sub> - 0.0            | 0627 L <sub>A</sub>      |                              |   | .,                                 | + 0.0086 \     | / <sub>12</sub> - 0.009 L <sub>D</sub>                             |                                       |  |  |
| D <sub>R</sub> = 19.6 (pc/mi/ln)  |  |   |                          |                              |   | D <sub>R</sub> = (pc/mi/ln)        |                |  |                                       |  |  |
|   | hibit 25-4)                            |   |                          |                              |   | xhibit 25-4)                       |                |  |                                       |  |  |
| Speed Dete  | rmination                              |   |                          |                              | <del>' '</del>  | etermina                           | tion           |  |                                       |  |  |
| 5   | xibit 25-19)                           |   |                          |                              | 3   | khibit 25-19)                      | 40)            |  |                                       |  |  |
| S <sub>R</sub> = 52.0 mph (Exhibit 25-19)   |  |   |                          |                              |   | h (Exhibit 25-                     |                |  |                                       |  |  |
| S <sub>0</sub> = 53.0 mph (Exhibit 25-19)   |  |   |                          |                              |   |                                    |                |  |                                       |  |  |
|   | h (Exhibit 25-19)<br>h (Exhibit 25-14) |   |                          |                              |   | oh (Exhibit 25-<br>oh (Exhibit 25- | •              |  |                                       |  |  |

|  |                            | FREEWA                | Y WEAV   | ING WOF  | RKSHEE         | Γ              |   |              |  |  |
|--|----------------------------|-----------------------|----------|--|----------------|----------------|---|--------------|--|--|
| General Informat   | tion                       |                       |          | Site Info  | rmation        |                |   |              |  |  |
| Analyst<br>Agency/Company<br>Date Performed<br>Analysis Time Period                          | SEB<br>CHA<br>02/15/<br>PM | 12                    |          | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | g Location     | Exit 2<br>NYSD | I-87 Northbound<br>Exit 2E on to 2W off<br>NYSDOT<br>2026 Diamond |              |  |  |
| Inputs   |                            |                       |          |  |                |                |   |              |  |  |
| Freeway free-flow speed,<br>Weaving number of lanes<br>Weaving seg length, L (ft)<br>Terrain | 11 .                       | 56<br>4<br>815<br>Lev |          | Weaving type<br>Volume ratio<br>Weaving rati               | , VR           |                | A<br>0.22<br>0.35   |              |  |  |
| Conversions to p   | oc/h Unde                  | r Base C              | ondition | _  |                |                |   | _            |  |  |
| (pc/h) V   | PHF                        | Truck %               | RV %     | E <sub>T</sub>   | E <sub>R</sub> | $f_{HV}$       | fp  | V            |  |  |
| V <sub>o1</sub> 4200   | 0.86                       | 2                     | 0        | 1.5  | 1.2            | 0.990          | 1.00  | 4932         |  |  |
| V <sub>o2</sub> 0  | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990          | 1.00  | 0            |  |  |
| V <sub>w1</sub> 840  | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990          | 1.00  | 922          |  |  |
| V <sub>w2</sub> 450  | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990          | 1.00  | 494          |  |  |
| V <sub>w</sub>   |                            |                       | 1416     | V <sub>nw</sub>  |                |                |   | 4932         |  |  |
| V  |                            |                       |          | I TIW  | ı              |                |   | 6348         |  |  |
| Weaving and No   | n-Weavin                   | g Speeds              | <br>S    |  |                |                |   |              |  |  |
|  |                            | Unconstr              |          |  |                | Cons           | trained   |              |  |  |
| (=   | Weaving                    |                       |          | ving (i = nw)  | Weavir         | ıg (i = w)     | Non-Wea   | ving ( = nw) |  |  |
| a (Exhibit 24-6)   | 0.15                       |                       |          | 0035   |                |                |   |              |  |  |
| b (Exhibit 24-6)<br>c (Exhibit 24-6)   | 2.20<br>0.97               |                       | !        | .30  | <u> </u>       |                |   |              |  |  |
| d (Exhibit 24-6)   | 0.80                       |                       |          | .75  |                |                |   |              |  |  |
| Weaving intensity factor, Wi   | 1.39                       |                       |          | .74  |                |                |   |              |  |  |
| Weaving and non-weaving speeds, Si (mi/h)  | 34.2                       |                       |          | .38  |                |                |   |              |  |  |
| Number of lanes required   | for unconstrain            | ned operation,        | Nw       | 1.28   | !              |                | !   |              |  |  |
| Maximum number of lanes  |                            |                       |          | 1.40   | _              |                |   |              |  |  |
| If Nw < Nw   | <u> </u>                   |                       |          | -  |                | (max) constr   | rained operati  | on           |  |  |
| Weaving Segment Weaving segment speed,   |                            |                       | 39.54    | s Service,   | and Cap        | acity          |   |              |  |  |
|  |                            |                       |          |  |                |                |   |              |  |  |
| Weaving segment density<br>Level of service, LOS   | 40.14<br>E                 |                       |          |  |                |                |   |              |  |  |
| Capacity of base condition   | n. c. (pc/h)               |                       | 6615     |  |                |                |   |              |  |  |
| Capacity as a 15-minute f  | D -                        | n/h)                  | 6550     |  |                |                |   |              |  |  |
| Capacity as a full-hour vol  |                            |                       | 5725     |  |                |                |   |              |  |  |
| Notes  | n (- o                     | ,                     | 1 3720   |  |                |                |   |              |  |  |

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HCS+TM Version 5.3

b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|   |  |                            | FREEWA                | Y WEAV    | ING WOR  | KSHEE          | Τ               |   |              |  |  |  |  |
|---|--|----------------------------|-----------------------|-----------|--|----------------|-----------------|---|--------------|--|--|--|--|
| General   | Informat   | ion                        |                       |           | Site Info                                      | rmation        |                 |   |              |  |  |  |  |
| Analyst<br>Agency/Con<br>Date Perforr<br>Analysis Tim       | ned  | SEB<br>CHA<br>02/15/<br>PM | 12                    |           | Weaving Seg Location E Jurisdiction N          |                |                 | I-87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2026 Diamond |              |  |  |  |  |
| Inputs  |  |                            |                       |           |  |                |                 |   |              |  |  |  |  |
| Weaving nui<br>Weaving seq<br>Terrain                       | e-flow speed, and the speed, and the speed, and the speed and the speed are speed. The speed are speed, and the speed are speed, and the speed, and the speed are speed, and the speed, and the speed are speed, and the speed are speed, and the speed are speed, and the speed are speed, and the speed are speed, and the speed are speed, and the speed are speed, and the speed are speed are speed are speed, and the speed are | Ň                          | 56<br>4<br>810<br>Lev | el        | Weaving type<br>Volume ratio,<br>Weaving ratio | , VR           |                 | A<br>0.19<br>0.10   |              |  |  |  |  |
| Convers   | sions to p   | c/h Unde                   | er Base C             | ondition  |  | r              | 1               | 1   |              |  |  |  |  |
| (pc/h)  | V  | PHF                        | Truck %               | RV %      | E <sub>T</sub>                                 | E <sub>R</sub> | f <sub>HV</sub> | fp  | V            |  |  |  |  |
| V <sub>o1</sub>   | 3320   | 0.92                       | 2                     | 0         | 1.5  | 1.2            | 0.990           | 1.00  | 3644         |  |  |  |  |
| $V_{o2}$  | 0  | 0.92                       | 2                     | 0         | 1.5  | 1.2            | 0.990           | 1.00  | 0            |  |  |  |  |
| V <sub>w1</sub>   | 710  | 0.92                       | 2                     | 0         | 1.5  | 1.2            | 0.990           | 1.00  | 779          |  |  |  |  |
| $V_{w2}$  | 80   | 0.92                       | 2                     | 0         | 1.5  | 1.2            | 0.990           | 1.00  | 87           |  |  |  |  |
| $V_{_{\mathrm{W}}}$   | 1  | •                          | •                     | 866       | $V_{nw}$                                       |                | •               | •   | 3644         |  |  |  |  |
| V   | 1  |                            |                       |           | ,  | ı              |                 |   | 4510         |  |  |  |  |
| Weaving   | g and No   | n-Weavin                   | g Speeds              | 3         |  |                |                 |   |              |  |  |  |  |
|   |  |                            | Unconstr              | 4         |  |                |                 | trained   |              |  |  |  |  |
| o /F.ubibit 0.4   |  | Weaving                    |                       |           | ving (i = nw)                                  | Weavir         | ng (i = w)      | Non-Wea   | ving ( = nw) |  |  |  |  |
| a (Exhibit 24<br>b (Exhibit 24                              |  | 0.15<br>2.20               |                       |           | .00  |                |                 | -   |              |  |  |  |  |
| c (Exhibit 24   |  | 0.97                       |                       | 1.30      |  |                |                 |   |              |  |  |  |  |
| d (Exhibit 24   |  | 0.80                       |                       |           | .75  |                |                 |   |              |  |  |  |  |
| Weaving intensi   | •  | 0.95                       | )                     | 0.43      |  |                |                 |   |              |  |  |  |  |
| Weaving and no<br>speeds, Si (mi/h                          |  | 38.5                       | 9                     | 47.12     |  |                |                 |   |              |  |  |  |  |
| Number of la<br>Maximum no                                  | anes required<br>umber of lanes  |                            |                       |           | 1.12<br>1.40                                   |                |                 |   |              |  |  |  |  |
|   |  | (max) uncons               |                       |           |  |                | v (max) constr  | rained operati  | on           |  |  |  |  |
|   |  |                            |                       |           | f Service,                                     | and Cap        | acity           |   |              |  |  |  |  |
|   |  |                            |                       |           |  |                |                 |   |              |  |  |  |  |
| Weaving segment density, D (pc/mi/ln) Level of service, LOS |  |                            |                       | 24.94     |  |                |                 |   |              |  |  |  |  |
|   | base condition   | r c (nc/h)                 |                       | C<br>6781 |  |                |                 |   |              |  |  |  |  |
|   |  | ow rate, c (vet            | n/h)                  | 6714      |  |                |                 |   |              |  |  |  |  |
|   |  | ume, c <sub>h</sub> (veh/h |                       | 6177      |  |                |                 |   |              |  |  |  |  |
| Notes   | a fall flour VOI   | unio, oh (venin            | ''                    | 0177      |  |                |                 |   |              |  |  |  |  |
| 140162  |  |                            |                       |           |  |                |                 |   |              |  |  |  |  |

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

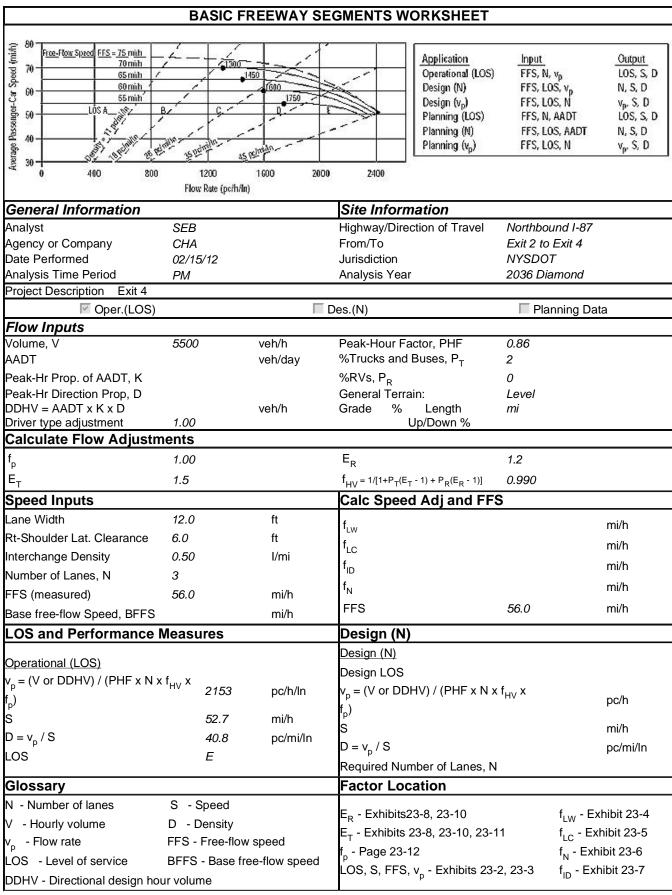
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such



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|  | BASIC F  | REEWAY SE                        | EGMENTS W   | ORKSHEET   |  |   |
|--|--|----------------------------------|---|--|--|---|
| 80 Froe-Flow Speed FFS = 75 mith 70 mith 70 mith 65 mith 55 mith 55 mith 60 mith 75 mi | B C C 45   | 1600 200                         | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, FFS, LOS, FFS, LOS, FFS, LOS, | v <sub>p</sub> N, S, D<br>N v <sub>p</sub> , S, D<br>ADT LOS, S, D<br>AADT N, S, D                                  |
| General Information  | Flow Rate (pc/h/lin                                  | 1                                | Site Inforn   | nation   |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>PM                         |                                  |   | ction of Travel  | Southbour<br>Exit 4 to E<br>NYSDOT<br>2036 Dian                      | xit 2   |
| Project Description Exit 4  Project Description Exit 4  Project Description Exit 4   |  |                                  | Des.(N)   |  | ☐ Planr  | ning Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D  | 4050   | veh/h<br>veh/day                 | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade % | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi  |   |
| Driver type adjustment  Calculate Flow Adjustr   | 1.00   |                                  |   | Up/Down %  |  |   |
|  | 1.00   |                                  | E <sub>R</sub>  |  | 1.2  |   |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.5  |                                  |   | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990  |   |
| Speed Inputs   |  |                                  |   | d Adj and FFS  |  |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>3<br>56.0                     | ft<br>ft<br>I/mi<br>mi/h<br>mi/h | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS              | •  | 56.0   | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h  |
| Base free-flow Speed, BFFS   | Mossuros   | 1111/11                          |   | <u> </u>   |  |   |
| LOS and Performance  Operational (LOS) $V_p = (V \text{ or DDHV}) / (PHF \times N f_p)$ S $D = V_p / S$ LOS  |  | pc/h/ln<br>mi/h<br>pc/mi/ln      | $f_p$ )<br>S<br>D = $v_p / S$   | HV) / (PHF x N x<br>mber of Lanes, N   | f <sub>HV</sub> x  | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |  |                                  | Factor Loc  | ation  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fr |                                  | f <sub>p</sub> - Page 23-   | 23-8, 23-10, 23-1 <sup>-</sup>   | <b>1</b> 1   | L <sub>W</sub> - Exhibit 23-4<br>L <sub>C</sub> - Exhibit 23-5<br>N - Exhibit 23-6<br>L <sub>D</sub> - Exhibit 23-7 |
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|  | BASIC F  | REEWAY SE        | EGMENTS W  | ORKSHEET   |  |   |
|--|--|------------------|--|--|--|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 60 mith 55 mith 50 LOS A 6 | B C C S  | 1600 200         | 0 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO<br>FFS, LO<br>FFS, LO<br>FFS, LO | NS, V <sub>p</sub> N, S, D<br>NS, N V <sub>p</sub> , S, D<br>AADT LOS, S, D<br>NS, AADT N, S, D         |
| General Information  | Flow Rate (pc/h/lir                                  | 1)               | Site Inforn  | nation   |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period  | SEB<br>CHA<br>02/15/12<br>PM                         |                  |  | ction of Travel  | Northbou<br>Exit 4 off<br>NYSDO                              | to Exit 4 on  |
| Project Description Exit 4   |  |                  |  |  |  |   |
| ✓ Oper.(LOS)   |  |                  | Des.(N)  |  | ☐ Pla  | nning Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 4500   | veh/h<br>veh/day | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra                 | Buses, P <sub>T</sub>  | 0.86<br>2<br>0<br>Level                                      |   |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00   | veh/h            | Grade %  | Length<br>Up/Down %  | mi   |   |
| Calculate Flow Adjustr   | nents  |                  |  |  |  |   |
| $f_p$  | 1.00   |                  | $E_R$  |  | 1.2  |   |
| $E_T$  | 1.5  |                  | $f_{HV} = 1/[1+P_T(E-$   | $_{T}$ - 1) + $P_{R}(E_{R}$ - 1)]  | 0.990  |   |
| Speed Inputs   |  |                  | Calc Spee  | d Adj and FFS  | 3  |   |
| Lane Width   | 12.0   | ft               | $f_{LW}$   |  |  | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft               | f <sub>LC</sub>  |  |  | mi/h  |
| Interchange Density  | 0.50   | I/mi             | f <sub>ID</sub>  |  |  | mi/h  |
| Number of Lanes, N   | 3  |                  | f  |  |  | mi/h  |
| FFS (measured)   | 56.0   | mi/h             | FFS  |  | 56.0   |   |
| Base free-flow Speed, BFFS   |  | mi/h             |  |  | 36.0   | mi/h  |
| LOS and Performance  | Measures   |                  | Design (N)   |  |  |   |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N :<br>f <sub>p</sub> )   | x f <sub>HV</sub> x 1762                             | pc/h/ln          | 1.5  | PHV) / (PHF x N x  | f <sub>HV</sub> x  | pc/h  |
| S  | 56.0   | mi/h             | f <sub>p</sub> )   |  |  | ! #   |
| $D = v_p / S$  | 31.5   | pc/mi/ln         | S<br>D = v / S   |  |  | mi/h  |
| LOS  | D  |                  | D = v <sub>p</sub> / S   | mber of Lanes, N   |  | pc/mi/ln  |
| Glossary   |  |                  | Factor Loc   |  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service  | S - Speed D - Density FFS - Free-flow BFFS - Base fr |                  | E <sub>R</sub> - Exhibits2<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design ho   | our volume   |                  |  | · p  |  | טו  |
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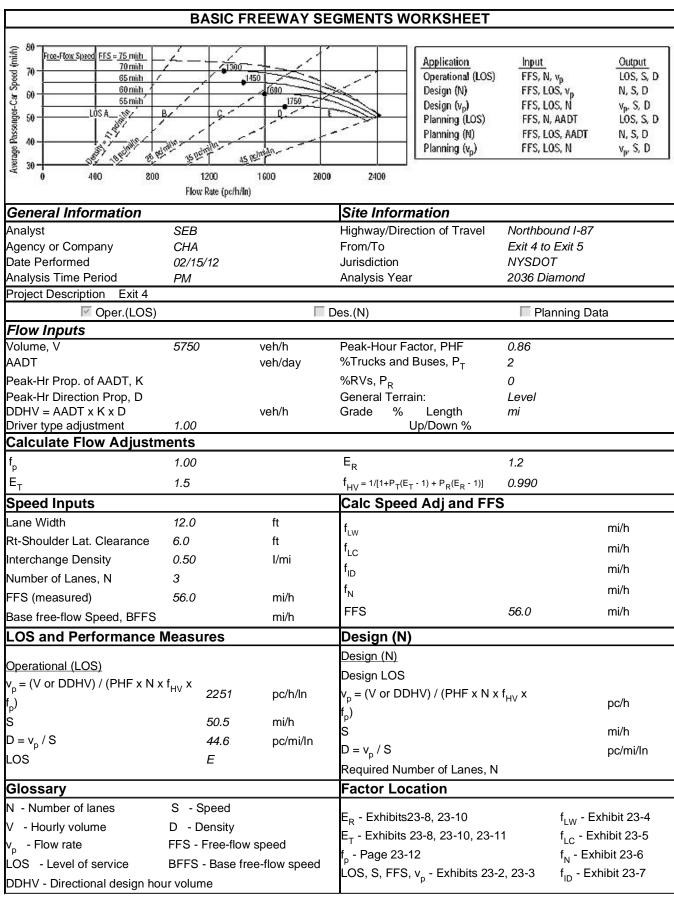
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|  | BASIC FI   | REEWAY SE                | GMENTS W   | ORKSHEET   |  |   |
|--|--|--------------------------|--|--|--|---|
| S0   Free-Flow Speed   FFS = 75 migh   70 migh   70 migh   65 migh   60 migh   55 migh   60 migh   65 migh   60 migh   65 migh   65 migh   60 migh   65 might   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 migh   65 might   65 might   65 migh   65 | B C C  | 450<br>(600<br>1750<br>0 |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v,<br>FFS, LOS<br>FFS, N, A<br>FFS, LOS<br>FFS, LOS | v <sub>p</sub> N, S, D<br>N v <sub>p</sub> , S, D<br>ADT LOS, S, D<br>AADT N, S, D  |
| 0 400 800  | 1200<br>Flow Rate (pc/h/ln)  | 1600 2000<br>)           | 2400   |  |  |   |
| General Information  |  |                          | Site Inform  |  |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>PM                                       |                          | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea                              | ection of Travel   | Southboul<br>Exit 4 off t<br>NYSDOT<br>2036 Dian                     | o Exit 4 on   |
| ✓ Oper.(LOS)   |  | П                        | Des.(N)  |  | ☐ Planı  | ning Data   |
| Flow Inputs  |  |                          |  |  |  | g   |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K  | 2800   | veh/h<br>veh/day         | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub>                                  |  | 0.92<br>2<br>0   |   |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D<br>Driver type adjustment   | 1.00   | veh/h                    | General Terra<br>Grade %   | ain:<br>Length<br>Up/Down %  | Level<br>mi  |   |
| Calculate Flow Adjustr   | nents  |                          |  |  |  |   |
| $f_p$  | 1.00   |                          | $E_R$  |  | 1.2  |   |
| $E_T$  | 1.5  |                          | $f_{HV} = 1/[1+P_T(E)]$  | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |   |
| Speed Inputs   |  |                          | Calc Spee  | d Adj and FFS  | 3  |   |
| Lane Width   | 12.0   | ft                       | $f_{LW}$   |  |  | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft                       | f <sub>LC</sub>  |  |  | mi/h  |
| Interchange Density  | 0.50   | I/mi                     |  |  |  | mi/h  |
| Number of Lanes, N   | 3  |                          | f <sub>ID</sub>  |  |  |   |
| FFS (measured)   | 56.0   | mi/h                     | T <sub>N</sub>   |  |  | mi/h  |
| Base free-flow Speed, BFFS   |  | mi/h                     | FFS  |  | 56.0   | mi/h  |
| LOS and Performance  | Measures   |                          | Design (N)   | )  |  |   |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N :   | x f <sub>HV</sub> x 1025   | pc/h/ln                  | <u>Design (N)</u><br>Design LOS  | )HV) / (PHF x N x  | f <sub>ыу</sub> х  | _   |
| f <sub>p</sub> )   |  | ·                        | f <sub>p</sub> )   |  |  | pc/h  |
| S  | 56.0   | mi/h                     | S S  |  |  | mi/h  |
| $D = v_p / S$  | 18.3   | pc/mi/ln                 | $D = v_p / S$  |  |  | pc/mi/ln  |
| LOS  | С  |                          | F  | mber of Lanes, N   |  | •   |
| Glossary   |  |                          | Factor Loc   |  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base freed our volume |                          | E <sub>R</sub> - Exhibits:<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1  | f <sub>LW</sub> - Exhibit 23-4<br>f <sub>LC</sub> - Exhibit 23-5<br>f <sub>N</sub> - Exhibit 23-6<br>f <sub>ID</sub> - Exhibit 23-7 |
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|  | BASIC F                  | REEWAY SE        | GMENTS W                   | ORKSHEET   |   |  |
|--|--------------------------|------------------|----------------------------|--|---|--|
| S0   Free-Flow Space   FFS = 75 mith   70 mith   70 mith   65 mith   65 mith   55 mith   55 mith   60   55 mith   60   60 mith   60 mi | B C C                    | 1500 2000        | 2400                       | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, Vp FFS, LOS, V FFS, LOS, I FFS, N, AA FFS, LOS, I | v <sub>p</sub> , S, D<br>DT LOS, S, D<br>AADT N, S, D      |
|  | Flow Rate (pc/h/lin      | )                | - Tax                      |  |   |  |
| General Information  |                          |                  | Site Inform                |  | 0 44  |  |
| Analyst<br>Agency or Company   | SEB<br>CHA               |                  | From/To                    | ection of Travel   | Southbound<br>Exit 5 to Ex                                      |  |
| Date Performed   | 02/15/12                 |                  | Jurisdiction               |  | NYSDOT  | π 4  |
| Analysis Time Period   | PM                       |                  | Analysis Yea               | ar   | 2036 Diamo  | ond  |
| Project Description Exit 4   |                          |                  |                            |  |   |  |
| Oper.(LOS)   |                          |                  | Des.(N)                    |  | ☐ Planni  | ng Data  |
| Flow Inputs  | 2000                     |                  |                            | · · · · · · ·  | 0.00  |  |
| Volume, V<br>AADT  | 3900                     | veh/h<br>veh/day | Peak-Hour F<br>%Trucks and |  | 0.92<br>2   |  |
|  |                          | veri/day         | %RVs, P <sub>R</sub>       | Duses, r <sub>T</sub>  | 0   |  |
| Peak-Hr Prop. of AADT, K<br>Peak-Hr Direction Prop, D  |                          |                  | General Terr               | ain·   | Level   |  |
| DDHV = AADT x K x D  |                          | veh/h            | Grade %                    | Length   | mi  |  |
| Driver type adjustment   | 1.00                     |                  |                            | Up/Down %  |   |  |
| Calculate Flow Adjustr   |                          |                  |                            |  |   |  |
| f <sub>p</sub>   | 1.00                     |                  | E <sub>R</sub>             |  | 1.2   |  |
| E <sub>T</sub>   | 1.5                      |                  | $f_{HV} = 1/[1+P_T(E)]$    | $E_T - 1) + P_R(E_R - 1)$  | 0.990   |  |
| Speed Inputs   |                          |                  | Calc Spee                  | ed Adj and FFS   | 3   |  |
| Lane Width   | 12.0                     | ft               | $f_{LW}$                   |  |   | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0                      | ft               | f <sub>LC</sub>            |  |   | mi/h   |
| Interchange Density  | 0.50                     | l/mi             |                            |  |   | mi/h   |
| Number of Lanes, N   | 3                        |                  | f <sub>ID</sub>            |  |   |  |
| FFS (measured)   | 56.0                     | mi/h             | f <sub>N</sub>             |  |   | mi/h   |
| Base free-flow Speed, BFFS   |                          | mi/h             | FFS                        |  | 56.0  | mi/h   |
| LOS and Performance  | Measures                 |                  | Design (N                  | )  |   |  |
| Operational (LOS)  |                          |                  | <u>Design (N)</u>          |  |   |  |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$  | v f v                    |                  | Design LOS                 |  |   |  |
| L.   | ^ ' <sub>HV</sub> ^ 1427 | pc/h/ln          | $v_p = (V \text{ or } DD)$ | OHV) / (PHF x N x  | $f_{HV} x$  | nc/h   |
| т <sub>р</sub> )<br>S  | 56.0                     | mi/h             | f <sub>p</sub> )           |  |   | pc/h   |
| S<br>D = v <sub>p</sub> / S  | 25.5                     | pc/mi/ln         | S                          |  |   | mi/h   |
| LOS  | 25.5<br>C                | рс/пп/п          | $D = v_p / S$              |  |   | pc/mi/ln   |
| LO3  | C                        |                  | Required Nu                | mber of Lanes, N   |   |  |
| Glossary   |                          |                  | Factor Lo                  | cation   |   |  |
| N - Number of lanes  | S - Speed                |                  | E - Evhibita               | 23-8 23-10   |   | - Evhihit 22 4   |
| V - Hourly volume  | D - Density              |                  | E <sub>R</sub> - Exhibits  |  |   | <sub>W</sub> - Exhibit 23-4<br><sub>C</sub> - Exhibit 23-5 |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow          | / speed          |                            | 23-8, 23-10, 23-1  |   |  |
| LOS - Level of service   | BFFS - Base fr           | ee-flow speed    | f <sub>p</sub> - Page 23-  |  | •   | - Exhibit 23-6   |
| DDHV - Directional design ho   | our volume               |                  | LU3, 3, FF3                | 5, v <sub>p</sub> - Exhibits 23-2  | د, عن-ی آ <sub>ا</sub>  | <sub>D</sub> - Exhibit 23-7                                |
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|   | BASIC F                        | REEWAY SE                 | GMENTS W  | ORKSHEET   |  |  |
|---|--------------------------------|---------------------------|---|--|--|--|
| Froe-Flow Spzed   FFS = 75 mith   70 mith | B C C                          | 450<br>(600)<br>1750<br>0 |   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AAE FFS, LOS, N | Output<br>LOS, S, D<br>N, S, D<br>v <sub>p</sub> , S, D<br>LOS, S, D<br>V <sub>p</sub> , S, D<br>v <sub>p</sub> , S, D |
| 0 400 800   | ) 1200<br>Fllow Rate (pc/h/lin | 1600 2000<br>)            | 2400  |  |  |  |
| General Information   |                                |                           | Site Inform   |  |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period  | CLD<br>CHA<br>07/30/13<br>PM   |                           | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea |  | Northbound I-<br>Exit 5 to Exit 6<br>NYSDOT<br>2036 Diamond  | 3  |
| Project Description Exit 4  Oper.(LOS)  |                                |                           | Des.(N)   |  | ☐ Planning   | Data   |
| Flow Inputs   |                                |                           | Des.(IV)  |  | i i iaiiiiig   | Data   |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K   | 6050                           | veh/h<br>veh/day          | Peak-Hour Face %Trucks and %RVs, P <sub>R</sub>         | Buses, P <sub>T</sub>  | 0.86<br>2<br>0   |  |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjustr   | 1.00                           | veh/h                     | General Terr<br>Grade %                                 | ain:<br>Length<br>Up/Down %  | Level<br>mi  |  |
|   | 1.00                           |                           | E <sub>R</sub>  |  | 1.2  |  |
| f <sub>p</sub><br>E <sub>⊤</sub>  | 1.00<br>1.5                    |                           |   | 1) LP (F 1)]   | 0.990  |  |
| Speed Inputs  | 1.5                            |                           |   | $\frac{1}{1} - 1 + P_R(E_R - 1)$   |  |  |
| I ane Width   | 12.0                           | ft                        |   | d Adj and FFS  |  |  |
| Rt-Shoulder Lat. Clearance  | 6.0                            | ft                        | f <sub>LW</sub>   |  |  | mi/h   |
| Interchange Density   | 0.50                           | I/mi                      | $f_{LC}$  |  |  | mi/h   |
| Number of Lanes, N  | 4                              | <b>,,</b>                 | $f_{ID}$  |  |  | mi/h   |
| FFS (measured)  | 56.0                           | mi/h                      | $f_N$   |  |  | mi/h   |
| Base free-flow Speed, BFFS  |                                | mi/h                      | FFS   |  | 56.0   | mi/h   |
| LOS and Performance   | Measures                       |                           | Design (N   | )  |  |  |
| Operational (LOS)  V <sub>p</sub> = (V or DDHV) / (PHF x N : f <sub>p</sub> )   |                                | pc/h/ln                   | Design (N) Design LOS v <sub>p</sub> = (V or DD         | )HV) / (PHF x N x f  | ·<br>·   | pc/h   |
| S   | 56.0                           | mi/h                      | t <sub>p</sub> )  |  |  | me:/l=   |
| $D = v_p / S$   | 31.7                           | pc/mi/ln                  | S<br>D = v <sub>p</sub> / S                             |  |  | mi/h<br>pc/mi/ln   |
| LOS   | D                              |                           | · ·   | mber of Lanes, N   |  | F 84.1114.111  |
| Glossary  |                                |                           | Factor Lo   |  |  |  |
| N - Number of lanes   | S - Speed                      |                           |   |  | ı  | Evhibit 00.4   |
| V - Hourly volume   | D - Density                    |                           | E <sub>R</sub> - Exhibits                               |  | =  | Exhibit 23-4   |
| v <sub>p</sub> - Flow rate  | FFS - Free-flow                | / speed                   |   | 23-8, 23-10, 23-11   |  | Exhibit 23-5   |
| LOS - Level of service  | BFFS - Base fr                 |                           | f <sub>p</sub> - Page 23-                               |  | • •  | Exhibit 23-6   |
| DDHV - Directional design ho  | our volume                     |                           | LUS, S, FFS   | , v <sub>p</sub> - Exhibits 23-2   | , ∠ა-ა ī <sub>ID</sub> -   | Exhibit 23-7   |
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|   | BASIC FF  | REEWAY SE                | GMENTS W   | ORKSHEET   |   |   |
|---|---|--------------------------|--|--|---|---|
| Free-Flow Spzed   FFS = 75 mith   70 mith | B C C   | 50 (600 1750 E           | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AAD' FFS, LOS, N | Output  LOS, S, D  N, S, D  v <sub>p</sub> , S, D  LOS, S, D  N, S, D  v <sub>p'</sub> , S, D |
| General Information   | Flow Rate (pc/h/lin)  | 3                        | Site Inform  | nation   |   |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4  | CLD<br>CHA<br>07/30/13<br>PM                                    |                          | 1  | ection of Travel   | Southbound I-6<br>Exit 6 to Exit 5<br>NYSDOT<br>2036 Diamond  |   |
| ✓ Oper.(LOS)  |   |                          | Des.(N)  |  | ☐ Planning  | Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D   | 3750  | veh/h<br>veh/day         | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level   |   |
| DDHV = AADT x K x D<br>Driver type adjustment   | 1.00  | veh/h                    | Grade %  | Length<br>Up/Down %  | mi  |   |
| Calculate Flow Adjustr  |   |                          |  |  | 4.0   |   |
| f <sub>p</sub><br>E <sub>⊤</sub>  | 1.00<br>1.5   |                          | E <sub>R</sub>   | 4) · D /F 4)1  | 1.2<br>0.990  |   |
| Speed Inputs  | 1.5   |                          |  | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]<br><b>d Adj and FFS</b>   |   |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)   | 12.0<br>6.0<br>0.50<br>4<br>56.0                                | ft<br>ft<br>I/mi<br>mi/h | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub>       | a Aaj ana 11 o   |   | mi/h<br>mi/h<br>mi/h<br>mi/h  |
| Base free-flow Speed, BFFS  | 30.0  | mi/h                     | FFS  |  | 56.0  | mi/h  |
| LOS and Performance   | Measures  | 1111/11                  | Design (N)   | )  |   |   |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N :<br>f <sub>p</sub> )<br>S   |   | pc/h/ln<br>mi/h          | <u>Design (N)</u><br>Design LOS                                      | )HV) / (PHF x N x f  | f <sub>HV</sub> x   | pc/h<br>mi/h  |
| D = v <sub>p</sub> / S<br>LOS   | 18.4<br>C   | pc/mi/ln                 | $D = v_p / S$<br>Required Nu   | mber of Lanes, N   |   | pc/mi/ln  |
| Glossary  |   |                          | Factor Loc   | cation   |   |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho  | S - Speed D - Density FFS - Free-flow BFFS - Base freeur volume | -                        | f <sub>p</sub> - Page 23-  | 23-8, 23-10, 23-11   | f <sub>LC</sub> -   | Exhibit 23-4<br>Exhibit 23-5<br>Exhibit 23-6<br>Exhibit 23-7                                  |
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|  | RA                               | MPS AND                       | KAMP JUN                  | CHONS W                      | OKNOH   | <u>-                                    </u> |                          |                                     |                      |  |
|--|----------------------------------|-------------------------------|---------------------------|------------------------------|---|--|--------------------------|-------------------------------------|----------------------|--|
| General Infor                              | mation                           |                               |                           | Site Infor                   | mation  |  |                          |                                     |                      |  |
| Analyst                                    | SEB                              |                               | Fre                       | eeway/Dir of Tra             | avel  | Northbound I-8                               | 37                       |                                     |                      |  |
| gency or Company                           | CHA                              |                               | Ju                        | nction                       |   | Exit 2W On-Ra                                | amp                      |                                     |                      |  |
| ate Performed                              | 02/1!                            | 5/12                          | Ju                        | risdiction                   |   | NYSDOT                                       |                          |                                     |                      |  |
| nalysis Time Period                        | l PM                             |                               | An                        | nalysis Year                 |   | 2036 Diamond                                 |                          |                                     |                      |  |
| roject Description                         | Exit 4                           |                               |                           |                              |   |  |                          |                                     |                      |  |
| nputs                                      |                                  |                               |                           |                              |   |  |                          |                                     |                      |  |
| lpstream Adj Ramp                          |                                  | Terrain: Level                |                           |                              |   |  |                          | Downstre<br>Ramp                    | eam Adj              |  |
| ▼ Yes □ Or                                 |                                  |                               |                           |                              |   |  |                          | ☐ Yes                               | □ On                 |  |
| No   | f                                |                               |                           |                              |   |  |                          | ✓ No                                | ☐ Off                |  |
| <sub>rup</sub> = 1100                      | ft                               |                               | E4.0 mnh                  |                              | <u> </u>  | 0 0 mph                                      |                          | L <sub>down</sub> =                 | ft                   |  |
| / <sub>u</sub> = 880 ve                    | eh/h                             | 3                             | = <sub>F</sub> = 56.0 mph | ا معطوا بيوطو                | $S_{FR} = 4$  | u.u mpn                                      |                          | V <sub>D</sub> =                    | veh/h                |  |
|  |                                  |                               |                           | show lanes, L <sub>A</sub> , | L <sub>D</sub> , V <sub>R</sub> , V <sub>f</sub> )              |  |                          |                                     |                      |  |
| Conversion to                              |                                  | der Base C                    | onditions                 | 1                            | 1   | 1  |                          |                                     |                      |  |
| (pc/h)                                     | V<br>(Veh/hr)                    | PHF                           | Terrain                   | %Truck                       | %Rv   | $f_{HV}$                                     | f <sub>p</sub>           | v = V/PH                            | $F x f_{HV} x f_{p}$ |  |
| reeway                                     | 4700                             | 0.86                          | Level                     | 2                            | 0   | 0.990  | 1.00                     |                                     | 5520                 |  |
| Ramp                                       | 780                              | 0.92                          | Level                     | 2                            | 0   | 0.990  | 1.00                     |                                     | 856                  |  |
| JpStream                                   | 880                              | 0.92                          | Level                     | 2                            | 0   | 0.990  | 1.00                     |                                     | 966                  |  |
| DownStream                                 |                                  | 1 1                           |                           |                              |   |  |                          |                                     |                      |  |
|  |                                  | Merge Areas                   |                           |                              |   |  | Diverge Are              | eas                                 |                      |  |
| Estimation of v <sub>12</sub>              |                                  |                               |                           |                              |   | ion of v <sub>12</sub>                       |                          |                                     |                      |  |
|  | V <sub>12</sub> = V <sub>F</sub> | (P <sub>54</sub> )            |                           |                              |   |  |                          | \/ \D                               |                      |  |
| 1404 ( / / / / / / / / / / / / / / / / / / |                                  |                               |                           |                              |   | V <sub>12</sub>                              | $= V_R + (V_F)$          |                                     |                      |  |
| EQ =                                       |                                  |                               |                           |                              | L <sub>EQ</sub> =   |  | (Equation                | 25-8 or 25-                         | 9)                   |  |
| FM =                                       |                                  |                               | on (Exhibit 25-5)         |                              | P <sub>FD</sub> =   |  | using Equ                | ıation (Exhibi                      | t 25-12)             |  |
| 12 =                                       | 3203                             | •                             |                           |                              | V <sub>12</sub> =   |  | pc/h                     |                                     |                      |  |
| <sub>3</sub> or V <sub>av34</sub>          |                                  | pc/h (Equatio                 | n 25-4 or 25-             |                              | $V_3$ or $V_{av34}$   |  | pc/h (Equat              | tion 25-15 or 2                     | 5-16)                |  |
|  | 5)                               | <u></u>                       |                           |                              | Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |  |                          |                                     |                      |  |
| s $V_3$ or $V_{av34} > 2,70$               |                                  |                               |                           |                              | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                  |  |                          |                                     |                      |  |
| s $V_3$ or $V_{av34} > 1.5$                |                                  |                               |                           |                              |   |  |                          |                                     |                      |  |
| Yes,V <sub>12a</sub> =                     | pc/h                             | (Equation 25                  | ·8)                       |                              | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18)                |  |                          |                                     |                      |  |
| Capacity Che                               | cks                              |                               |                           |                              | Capacity  | y Checks                                     |                          |                                     |                      |  |
|  | Actual                           | Ca                            | pacity                    | LOS F?                       |   | Actu   | ıal                      | Capacity                            | LOS F                |  |
|  |                                  |                               |                           |                              | V <sub>F</sub>  |  | Exhibit                  | 25-14                               |                      |  |
| $V_{FO}$                                   | 6376                             | Exhibit 25-7                  |                           | No                           | $V_{FO} = V_{F}$  | - V <sub>D</sub>                             | Exhibit                  | 25-14                               |                      |  |
| FO   |                                  |                               |                           |                              | V <sub>R</sub>  | K  | Exhibit                  |                                     | _                    |  |
|  | <u> </u>                         | <u> </u>                      |                           |                              | <u>'</u>  | <u> </u>                                     |                          |                                     |                      |  |
| low Entering                               |                                  | 1                             |                           | T v" + " 0                   | Flow En   |  | verge Infl               |                                     |                      |  |
| \/   | Actual                           |                               | )esirable                 | Violation?                   |   | Actual                                       | 1                        | Desirable                           | Violation?           |  |
| V <sub>R12</sub>                           | 4059                             | Exhibit 25-7                  | 4600:All                  | No                           | V <sub>12</sub>   |  | Exhibit 25-              |                                     | <u> </u>             |  |
| evel of Serv                               |                                  |                               |                           |                              | 1   |  | Determina                |                                     | ot F)                |  |
| $D_{R} = 5.475 +$                          | $0.00734 \text{ V}_{R} + 0$      | 0.0078 V <sub>12</sub> - 0.00 | 0627 L <sub>A</sub>       |                              | [   | $O_{R} = 4.252$                              | + 0.0086 V <sub>12</sub> | <sub>2</sub> - 0.009 L <sub>D</sub> |                      |  |
| <sub>R</sub> = 31.4 (pc                    | /mi/ln)                          |                               |                           |                              | $D_R = (p$  | c/mi/ln)                                     |                          |                                     |                      |  |
| OS = D (Exhib                              | oit 25-4)                        |                               |                           |                              | LOS = (E  | xhibit 25-4)                                 |                          |                                     |                      |  |
| Speed Deterr                               | nination                         |                               |                           |                              | Speed D   | Petermina                                    | tion                     |                                     |                      |  |
| l <sub>S</sub> = 0.479 (Exi                |                                  |                               |                           |                              | <del>                                     </del>                | xhibit 25-19)                                |                          |                                     |                      |  |
| o .  |                                  |                               |                           |                              |   |  |                          |                                     |                      |  |
| S <sub>R</sub> = 49.3 mph (Exhibit 25-19)  |                                  |                               |                           |                              | **  |  |                          |                                     |                      |  |
|  |                                  |                               |                           |                              | S <sub>0</sub> = mph (Exhibit 25-19)<br>S = mph (Exhibit 25-15) |  |                          |                                     |                      |  |
| <sub>0</sub> = 49.4 mph (                  | (Exhibit 25-19)                  |                               |                           |                              |   |  |                          |                                     |                      |  |

|  |                                   | RAMP                | S AND RAN                | IP JUNCTI   | ONS WO   | RKS              | HEET                     |   |                     |                                    |  |
|--|-----------------------------------|---------------------|--------------------------|---|--|------------------|--------------------------|---|---------------------|------------------------------------|--|
| General Inf  | ormation                          |                     | <u> </u>                 | Site Infor  |  |                  |                          |   |                     |                                    |  |
| Analyst<br>Agency or Compa<br>Date Performed<br>Analysis Time Pel              | SEB<br>iny CHA<br>02/1<br>riod PM |                     | J<br>J                   | reeway/Dir of Tr<br>unction<br>urisdiction<br>Analysis Year | avel [   | Exit 4 I         |                          |   |                     |                                    |  |
| Project Descriptio   | n Exit 4                          |                     |                          |   |  |                  |                          |   |                     |                                    |  |
| Inputs   |                                   | Terrain: Leve       | .I                       |   |  |                  |                          |   |                     |                                    |  |
| Upstream Adj Rar<br>Yes  | •                                 | Terrain. Leve       | :1                       |   |  |                  |                          |   | Downstrea<br>Ramp   | am Adj                             |  |
| ✓ No   |                                   |                     |                          |   |  |                  |                          |   | ✓ Yes               | ☑ On                               |  |
| I INO  | Oli                               |                     |                          |   |  |                  |                          |   | □ No                | ☐ Off                              |  |
| L <sub>up</sub> = ft   |                                   | <u> </u>            | <sub>FF</sub> = 56.0 mph |   | S - 1  | 0 0 mr           | h.                       |   | L <sub>down</sub> = | 1850 ft                            |  |
| V <sub>u</sub> = veł   | n/h                               |                     | • •                      | ( show lanes, L <sub>A</sub>                                | $S_{FR} = 40.0 \text{ mph}$ $L_{A'} L_{D'} V_{R'} V_{f'} V_{f'}$ |                  |                          |   |                     | 980 veh/h                          |  |
| Conversion   | to pc/h Un                        | der Base (          | Conditions               |   |  |                  |                          |   |                     |                                    |  |
| (pc/h)   | V<br>(Veh/hr)                     | PHF                 | Terrain                  | %Truck  | %Rv  |                  | ${\sf f}_{\sf HV}$       | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 5500                              | 0.86                | Level                    | 2   | 0  | 0                | .990                     | 1.00  | 64                  | 159                                |  |
| Ramp   | 1000                              | 0.86                | Level                    | 2   | 0  | 0                | .990                     | 1.00  | 11                  | 74                                 |  |
| UpStream<br>DownStream   | 000                               | 0.00                | Lovel                    | 1   |  |                  | nne                      | 1.00  | 4.4                 | 10                                 |  |
| DownStream   | 980                               | 0.88<br>Merge Areas | Level                    | 1   | 0  | 0                | 995                      | 1.00<br>Diverge Areas                               | 11                  | 19                                 |  |
| Estimation   |                                   | Merge Areas         |                          |   | Estimati   | on c             |                          | Diverge Areas                                       |                     |                                    |  |
|  |                                   | (D )                |                          |   |  |                  |                          | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | \D                  |                                    |  |
| $V_{12} = V_F (P_{FM})$  |                                   |                     |                          |   | _  |                  |                          | Equation 25-8                                       |                     |                                    |  |
| $L_{EQ}$ = (Equation 25-2 or 25-3)<br>$P_{EM}$ = using Equation (Exhibit 25-5) |                                   |                     |                          |   | L <sub>EQ</sub> =  |                  |                          | · · · · ·   |                     | ::L:+ 2F 12\                       |  |
| P <sub>FM</sub> =<br>V -   | pc/h                              | Equation (          | EXTIIDIT 20-0)           |   | P <sub>FD</sub> =  |                  |                          | .545 <b>using E</b> q<br>052 <b>pc/h</b>            | uation (Exi         | 11DIL 25-12)                       |  |
| V <sub>12</sub> =<br>V <sub>3</sub> or V <sub>av34</sub>                       | •                                 | (Equation 25        | ( 4 or 25 5)             |   | V <sub>12</sub> =<br>V <sub>3</sub> or V <sub>av34</sub>         |                  |                          | •   | otion OF 1          | F 0F 40                            |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2                                     |                                   |                     | )-4 01 23-3)             |   |  | > 2 7            |                          | <sup>407</sup> pc/h (Equ<br>☐ Yes                   | ation 25-1          | 5 OF 25-16                         |  |
|  | .5 * V <sub>12</sub> /2           |                     |                          |   |  |                  |                          | Yes No  |                     |                                    |  |
| If Yes,V <sub>12a</sub> =  | : <del>-</del>                    | (Equation 25        | 5-8)                     |   | If Yes, $V_{12a} =$  |                  |                          | oc/h (Equation                                      | 25-18)              |                                    |  |
| Capacity C   |                                   | (Equation 20        | )-O)                     |   | Capacity   |                  |                          | on (Equation  | 23-10)              |                                    |  |
| Capacity Ci  | Actual                            | T C                 | apacity                  | LOS F?  | Capacity   | , 011            | Actual                   | Ca  | pacity              | LOS F                              |  |
|  | 7.0.00                            | <del>1 i</del>      | аравну                   |   | V <sub>F</sub>   |                  | 6459                     | Exhibit 25-1  | T .                 | No                                 |  |
| $V_{FO}$   |                                   | Exhibit 25-7        |                          |   | $V_{FO} = V_{F}$   | - V <sub>D</sub> | 5285                     | Exhibit 25-1  | +                   | No                                 |  |
| 1 40   |                                   | EXHIBIT 20 7        |                          |   | V <sub>R</sub>   | ·ĸ               | 1174                     | Exhibit 25-3  |                     | No                                 |  |
| Elow Entor   | ing Marga Ir                      | ofluonos A          | roo                      |   |  | 40 viv           |                          |   |                     | INO                                |  |
| riow Enteri  | ing Merge Ir                      | -                   | Desirable                | Violation?  | riow En  | _                | <i>ig Dive</i><br>Actual | rge Influen<br>Max Desirat                          |                     | Violation                          |  |
| V <sub>R12</sub>   | Actual                            | Exhibit 25-7        | 2 John Will              | violation;  | V <sub>12</sub>  | 1                | 4052                     | Exhibit 25-14                                       | 4400:All            | No                                 |  |
|  | <br>rvice Deteri                  |                     | if not F)                |   |  |                  |                          | eterminatio   |                     |                                    |  |
|  | 0.00734 v <sub>R</sub> +          | •                   |                          |   |  |                  |                          | .0086 V <sub>12</sub> - 0.                          | -                   | • /                                |  |
|  | mi/ln)                            | 12                  | А                        |   | L  | ••               | /mi/ln)                  | 12  | J. J.               |                                    |  |
|  | ibit 25-4)                        |                     |                          |   | LOS = D (Exhibit 25-4)   |                  |                          |   |                     |                                    |  |
| Speed Dete   | rmination                         |                     |                          |   | Speed D  | eter             | minatio                  | on  |                     |                                    |  |
|  | 25-19)                            |                     |                          |   | D <sub>s</sub> = 0.469 (Exhibit 25-19)                           |                  |                          |   |                     |                                    |  |
| _  | xhibit 25-19)                     |                     |                          |   | S <sub>R</sub> = 49.4 mph (Exhibit 25-19)                        |                  |                          |   |                     |                                    |  |
|  |                                   |                     |                          |   | S <sub>0</sub> = 55.9 mph (Exhibit 25-19)                        |                  |                          |   |                     |                                    |  |
|  | xhibit 25-19)                     |                     |                          |   | 90 55  | .,               | ( LXI 1151               | _0 .0,  |                     |                                    |  |
| S <sub>0</sub> = mph (E  | xhibit 25-19)<br>xhibit 25-14)    |                     |                          |   |  |                  | (Exhibit                 |   |                     |                                    |  |

|   | RAI                 | MPS AND                       | RAMP JUNG                                 | CHONS W                      | ORKSHE   | <u>:EI</u>                     |                    |                                      |                                      |  |
|---|---------------------|-------------------------------|---|------------------------------|--|--------------------------------|--------------------|--------------------------------------|--------------------------------------|--|
| General Infor   | mation              |                               |   | Site Infor                   | mation   |                                |                    |                                      |                                      |  |
| Analyst<br>Agency or Company  | SEB<br>CHA          |                               |   | eeway/Dir of Tra             |  | Northbound I-<br>Exit 4 NB On- |                    |                                      |                                      |  |
| ate Performed   | 02/1                |                               | Ju  | risdiction                   |  | NYSDOT                         |                    |                                      |                                      |  |
| nalysis Time Period   | d PM                |                               | An  | alysis Year                  |  | 2036 Diamon                    | d                  |                                      |                                      |  |
| roject Description  | Exit 4              |                               |   |                              |  |                                |                    |                                      |                                      |  |
| nputs   |                     | <u> </u>                      |   |                              |  |                                |                    |                                      |                                      |  |
| pstream Adj Ramp  |                     | Terrain: Level                |   |                              |  |                                |                    | Downstro<br>Ramp                     | eam Adj                              |  |
| Yes Or  | 1                   |                               |   |                              |  |                                |                    | ☐ Yes                                | □ On                                 |  |
| □ No     Of   | f                   |                               |   |                              |  |                                |                    | ™ No                                 | ☐ Off                                |  |
| <sub>up</sub> = 1850  | ft                  |                               |   |                              |  |                                |                    | L <sub>down</sub> =                  | ft                                   |  |
|   |                     | S                             | <sub>FF</sub> = 56.0 mph                  |                              | $S_{FR} = 4$   | 0.0 mph                        |                    | \/ _                                 | veh/h                                |  |
| ' <sub>u</sub> = 1000 v   |                     |                               |   | show lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$  |                                | V <sub>D</sub> =   | ven/n                                |                                      |  |
| Conversion t  | o pc/h Un           | der Base C                    | Conditions                                |                              |  |                                |                    |                                      |                                      |  |
| (pc/h)  | V<br>(Veh/hr)       | PHF                           | Terrain                                   | %Truck                       | %Rv  | f <sub>HV</sub>                | fp                 | v = V/PH                             | F x f <sub>HV</sub> x f <sub>p</sub> |  |
| reeway  | 4500                | 0.86                          | Level                                     | 2                            | 0  | 0.990                          | 1.00               |                                      | 5285                                 |  |
| Ramp  | 980                 | 0.88                          | Level                                     | 1                            | 0  | 0.995                          | 1.00               |                                      | 1119                                 |  |
| JpStream  | 1000                | 0.92                          | Level                                     | 3                            | 0  | 0.985                          | 1.00               |                                      | 1103                                 |  |
| DownStream  |                     | Merge Areas                   |   |                              |  |                                | Divorgo A          | rone                                 |                                      |  |
| stimation of  |                     | ivier ge Areas                | Diverge Are Estimation of v <sub>12</sub> |                              |  |                                |                    | itas                                 |                                      |  |
|   |                     | <u> </u>                      |   |                              | Lounau   | 1011 01 1 12                   | 2                  |                                      |                                      |  |
|   | $V_{12} = V_F$      |                               |   |                              |  | $V_1$                          | $_2 = V_R + (V_R)$ | V <sub>R</sub> )P <sub>FD</sub>      |                                      |  |
| EQ =  |                     | (Equation 2                   |   |                              | L <sub>EQ</sub> =  |                                | (Equation          | n 25-8 or 25-                        | 9)                                   |  |
| FM =  | 0.614               | using Equation                | on (Exhibit 25-5)                         |                              | P <sub>FD</sub> =  |                                | using E            | quation (Exhibi                      | t 25-12)                             |  |
| 12 =  | 3246                |                               |   |                              | V <sub>12</sub> =  |                                | pc/h               |                                      |                                      |  |
| ' <sub>3</sub> or V <sub>av34</sub>   |                     | pc/h (Equatio                 | n 25-4 or 25-                             |                              | V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 25-15 or 25-16) |                                |                    |                                      |                                      |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,70  | 5)<br>10 nc/h2 □ ∨o | o 🔽 No                        |   |                              |  | <sub>sa</sub> > 2,700 pc/      | h?                 |                                      |                                      |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,70<br>s V <sub>3</sub> or V <sub>av34</sub> > 1.5 |                     |                               |   |                              | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                     |                                |                    |                                      |                                      |  |
|   |                     |                               | 0)  |                              | If Yes, $V_{12a}$ = pc/h (Equation 25-18)                          |                                |                    |                                      |                                      |  |
| Yes,V <sub>12a</sub> =  |                     | (Equation 25                  | -8)                                       |                              | 120  |                                |                    |                                      | <u> </u>                             |  |
| Capacity Che  | ,                   | I c.                          |   | LOS F?                       | Capacity   | y Checks                       | ī                  | C!t                                  | 1 100 50                             |  |
|   | Actual              | l Ca                          | npacity                                   | LUSF?                        | \/   | Act                            |                    | Capacity                             | LOS F                                |  |
| .,  |                     |                               |   | l                            | V <sub>F</sub>   |                                |                    | it 25-14                             | _                                    |  |
| $V_{FO}$  | 6404                | Exhibit 25-7                  |   | No                           | $V_{FO} = V_{F}$   | - V <sub>R</sub>               |                    | it 25-14                             |                                      |  |
|   |                     |                               |   |                              | V <sub>R</sub>   |                                | Exhib              | it 25-3                              |                                      |  |
| low Entering  | g Merge In          | fluence A                     | rea                                       |                              | Flow En  | tering Di                      | verge Int          | luence Are                           |                                      |  |
|   | Actual              | 1                             | Desirable                                 | Violation?                   | ļ  | Actual                         |                    | Desirable                            | Violation?                           |  |
| V <sub>R12</sub>  | 4365                | Exhibit 25-7                  | 4600:All                                  | No                           | V <sub>12</sub>  | <u> </u>                       | Exhibit 25         |                                      |                                      |  |
| evel of Serv  |                     |                               |   |                              | 1  |                                |                    | nation (if n                         | ot F)                                |  |
| 10  |                     | 0.0078 V <sub>12</sub> - 0.00 | 0627 L <sub>A</sub>                       |                              | [  | $O_R = 4.252$                  | + 0.0086 V         | <sub>12</sub> - 0.009 L <sub>D</sub> |                                      |  |
| $O_{R} = 30.8 \text{ (pc)}$   | :/mi/ln)            |                               |   |                              | $D_R = (p$   | c/mi/ln)                       |                    |                                      |                                      |  |
| OS = D (Exhil   | oit 25-4)           |                               |   |                              | LOS = (E   | xhibit 25-4                    | )                  |                                      |                                      |  |
| Speed Deterr  | nination            |                               |   |                              | Speed D  | Determina                      | ation              |                                      |                                      |  |
| 1 <sub>S</sub> = 0.523 (Exi   |                     |                               |   |                              | $D_s = $ (Exhibit 25-19)   |                                |                    |                                      |                                      |  |
| S <sub>R</sub> = 48.7 mph (Exhibit 25-19)   |                     |                               |   |                              | S <sub>R</sub> = mph (Exhibit 25-19)                               |                                |                    |                                      |                                      |  |
|   |                     |                               |   |                              | $S_0$ = mph (Exhibit 25-19)  |                                |                    |                                      |                                      |  |
| S <sub>0</sub> = 50.5 mph (Exhibit 25-19)   |                     |                               |   |                              | S = mph (Exhibit 25-15)  |                                |                    |                                      |                                      |  |
| = 49.2 mnh  | (Exhibit 25-14)     | S = 49.2 mph (Exhibit 25-14)  |   |                              |  |                                | - [5]              |                                      |                                      |  |

| • • • •  |                           | IVAIIII                  | S AND RAM   |  |   |                    |                 |   |                     |                                    |  |
|--|---------------------------|--------------------------|---|--|---|--------------------|-----------------|---|---------------------|------------------------------------|--|
| General Infor  |                           |                          |   | Site Infor   |   |                    |                 |   |                     |                                    |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioc | SEB<br>CHA<br>02/1!<br>PM |                          | J   | reeway/Dir of Tra<br>unction<br>urisdiction<br>unalysis Year | Travel Northbound I-87 Exit 5 NB Off NYSDOT 2036 Diamond          |                    |                 |   |                     |                                    |  |
| Project Description  |                           |                          |   |  |   |                    |                 |   |                     |                                    |  |
| Inputs   |                           |                          |   |  |   |                    |                 |   |                     |                                    |  |
| Upstream Adj Ramp  |                           | Terrain: Level           |   |  |   |                    |                 |   | Downstrea<br>Ramp   | m Adj                              |  |
| ✓ Yes ✓ Or   |                           |                          |   |  |   |                    |                 |   | · '                 | □ On                               |  |
| □ No □ Of  | :                         |                          |   |  |   |                    |                 |   | ✓ No                | ☐ Off                              |  |
| L <sub>up</sub> = 7810   | ft                        |                          | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 35.0 \text{ mph}$ |  |   |                    |                 |   | L <sub>down</sub> = | ft                                 |  |
| $V_u = 980 \text{ Ve}$   | eh/h                      | 3                        |   | show lanes, L <sub>A</sub> ,                                 | $S_{FR} = 35.0 \text{ mph}$<br>$S_{FR} = J_D, V_R, V_f$           |                    |                 |   |                     | veh/h                              |  |
| Conversion to  | pc/h Und                  | der Base (               | Conditions  |  |   |                    |                 |   |                     |                                    |  |
| (pc/h)   | V<br>(Veh/hr)             | PHF                      | Terrain   | %Truck   | %Rv   |                    | f <sub>HV</sub> | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 5750                      | 0.86                     | Level   | 2  | 0   | 0.                 | 990             | 1.00  | 675                 | i3                                 |  |
| Ramp   | 440                       | 0.92                     | Level   | 3  | 0   | 0.                 | 985             | 1.00  | 48                  | 5                                  |  |
| UpStream   | 980                       | 0.88                     | Level   | 1  | 0   | 0.                 | 995             | 1.00  | 111                 | 9                                  |  |
| DownStream   |                           | Merge Areas              |   |  | -   |                    |                 | Diverge Areas                                       |                     |                                    |  |
| Estimation of  |                           | ivier ge Areas           |   |  | Estimati  | ion c              |                 | biverge Areas                                       |                     |                                    |  |
|  |                           | (5.)                     |   |  | Lounau  |                    |                 | ., ., .,  | <u> </u>            |                                    |  |
| l.   | $V_{12} = V_F$            |                          | >   |  |   |                    |                 | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> |                     |                                    |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                              |                           |                          |   |  | L <sub>EQ</sub> =   |                    |                 | 906.29 (Equati                                      |                     |                                    |  |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)                        |                           |                          |   |  | P <sub>FD</sub> =   |                    |                 | .569 using Ec                                       | uation (Exhi        | bit 25-12)                         |  |
| V <sub>12</sub> =  | pc/h                      |                          |   |  | V <sub>12</sub> =   |                    |                 | 051 pc/h  |                     |                                    |  |
| $V_3$ or $V_{av34}$  |                           | (Equation 25             | -4 or 25-5)   |  | $V_3$ or $V_{av34}$   |                    |                 | 702 pc/h (Equ                                       | ation 25-15         | or 25-16                           |  |
| Is $V_3$ or $V_{av34} > 2,70$  |                           |                          |   |  |   |                    |                 | Yes No  |                     |                                    |  |
| Is $V_3$ or $V_{av34} > 1.5$   | · <del>-</del>            |                          |   |  |   |                    |                 | TYes   ✓ No   |                     |                                    |  |
| If Yes,V <sub>12a</sub> =  |                           | (Equation 25             | -8)   |  | If Yes, V <sub>12a</sub> = 4053 pc/h (Equation 25-18)             |                    |                 |   |                     |                                    |  |
| Capacity Che   | cks                       |                          |   |  | Capacity  | y Ch               | ecks            |   |                     |                                    |  |
|  | Actual                    | Ca                       | apacity   | LOS F?   | ļ   |                    | Actual          | _   | pacity              | LOS F                              |  |
|  |                           |                          |   |  | V <sub>F</sub>  |                    | 6753            | Exhibit 25-1  | 4 6780              | No                                 |  |
| $V_{FO}$   |                           | Exhibit 25-7             |   |  | $V_{FO} = V_{F}$  | - V <sub>R</sub>   | 6268            | Exhibit 25-1  | 4 6780              | No                                 |  |
|  |                           |                          |   |  | $V_R$   |                    | 485             | Exhibit 25-3  | 3 2000              | No                                 |  |
| Flow Entering  | Merge In                  | fluence A                | rea   | -  | Flow En   | terir              | g Dive          | rge Influen   | ce Area             | •                                  |  |
|  | Actual                    | 1                        | Desirable   | Violation?   |   | 1                  | Actual          | Max Desiral   |                     | Violation                          |  |
| V <sub>R12</sub>   |                           | Exhibit 25-7             |   |  | V <sub>12</sub>   |                    | 4051            | Exhibit 25-14                                       | 4400:All            | No                                 |  |
| Level of Serv  | ice Detern                | nination (i              | f not F)  |  | Level of  | Ser                | vice De         | terminatio  | n (if not l         | <del>-</del>                       |  |
| $D_R = 5.475 + 0.$   | 00734 v <sub>R</sub> +    | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>                                  |  |   | D <sub>R</sub> = 4 | 1.252 + 0       | 0.0086 V <sub>12</sub> - 0.                         | 009 L <sub>D</sub>  |                                    |  |
| D <sub>R</sub> = (pc/mi/   | ln)                       |                          | ••  |  |   |                    | /mi/ln)         |   | <del>-</del>        |                                    |  |
| LOS = (Exhibi  | t 25-4)                   |                          |   |  | 1   |                    | oit 25-4)       |   |                     |                                    |  |
| Speed Determ   |                           |                          |   |  | Speed D   | •                  |                 | on  |                     |                                    |  |
| $M_S = $ (Exibit 25)   |                           |                          |   |  |   |                    |                 |   |                     |                                    |  |
| o .  |                           |                          |   |  | $D_S = 0.472$ (Exhibit 25-19)<br>$S_R = 49.4$ mph (Exhibit 25-19) |                    |                 |   |                     |                                    |  |
|  |                           |                          |   |  | $S_0$ = 54.8 mph (Exhibit 25-19)                                  |                    |                 |   |                     |                                    |  |
| S <sub>0</sub> = mph (Exh  |                           |                          |   |  | S = 51.4 mph (Exhibit 25-15)                                      |                    |                 |   |                     |                                    |  |
| S = mph (Exh   | IDIT フトーフグ                |                          |   |  |   |                    |                 |   |                     |                                    |  |

|  |                | NAMIF               | S AND RAM   |  |  |                                     | ,,,, <u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u> |  |  |                                    |  |
|--|----------------|---------------------|---|--|--|-------------------------------------|---|--|--|------------------------------------|--|
| General Info   |                |                     |   | Site Infor   |  |                                     |   |  |  |                                    |  |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Perio | 02/1           |                     | Ji<br>Ji  | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | 1  | Southb<br>Exit 2\<br>NYSD<br>2036 [ | V Off   |  |  |                                    |  |
| Project Description  |                |                     |   | . <b>.</b>   |  |                                     |   |  |  |                                    |  |
| Inputs   |                |                     |   |  |  |                                     |   |  |  |                                    |  |
| Upstream Adj Ram   | р              | Terrain: Leve       |   |  |  |                                     |   |  | Downstrea<br>Ramp                            | m Adj                              |  |
| □ Yes □ C  | )n             |                     |   |  |  |                                     |   |  | ✓ Yes  | ✓ On                               |  |
| ™ No □ C   | Off            |                     |   |  |  |                                     |   |  | □ No   | ☐ Off                              |  |
| L <sub>up</sub> = ft   |                | S                   | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$ |  |  |                                     |   |  | down   | 1300 ft                            |  |
| V <sub>u</sub> = veh/  | h              |                     | Sketch (  | show lanes, L <sub>A</sub>                                 | $L_{D'}V_{R'}V_{f}$                              |                                     |   |  | V <sub>D</sub> =                             | 750 <b>veh</b> /                   |  |
| Conversion   | to pc/h Un     | der Base (          | Conditions  |  |  |                                     |   |  |  |                                    |  |
| (pc/h)   | V<br>(Veh/hr)  | PHF                 | Terrain   | %Truck   | %Rv  |                                     | $f_{HV}$                                      | f <sub>p</sub>                         | v = V/PHF                                    | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 4050           | 0.92                | Level   | 2  | 0  | 0                                   | .990  | 1.00                                   | 4446   |                                    |  |
| Ramp   | 590            | 0.92                | Level   | 2  | 0  | 0                                   | .990  | 1.00                                   | 64   | 8                                  |  |
| UpStream   | 750            | 0.00                | 1 1   |  | 0  | +                                   | 000   | 1.00                                   | 00   | 2                                  |  |
| DownStream   | 750            | 0.92<br>Merge Areas | Level   | 2  | 0  | 0                                   | .990  | 1.00<br>Diverge Areas                  | 82   | 3                                  |  |
| Estimation of  |                | ivici ye Ai eas     |   |  | Estimati   | ion d                               |   | Diverge Areas                          |  |                                    |  |
|  |                | (B)                 |   |  | Lotimati   |                                     |   | ., ., .,                               | <u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u> |                                    |  |
|  | $V_{12} = V_F$ |                     |   |  |  |                                     |   | = V <sub>R</sub> + (V <sub>F</sub> - V |  |                                    |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                            |                |                     |   |  | L <sub>EQ</sub> =                                |                                     |   | Equation 25-8                          |  |                                    |  |
| P <sub>FM</sub> =  | _              | Equation (E         | xhibit 25-5)  |  | P <sub>FD</sub> =                                |                                     |   | .619 using Ed                          | quation (Exhi                                | bit 25-12)                         |  |
| V <sub>12</sub> =  | pc/h           |                     |   |  | V <sub>12</sub> =                                |                                     |   | 999 pc/h                               |  |                                    |  |
| $V_3$ or $V_{av34}$  |                | (Equation 25        | -4 or 25-5)   |  | $V_3$ or $V_{av34}$                              |                                     |   | 447 pc/h (Equ                          | ation 25-15                                  | or 25-16                           |  |
| Is $V_3$ or $V_{av34} > 2.7$   |                |                     |   |  |  |                                     |   | ☐ Yes 🗹 No                             |  |                                    |  |
| Is $V_3$ or $V_{av34} > 1.5$   | :=             |                     |   |  |  |                                     | 5 * V <sub>12</sub> /2                        | TYes  ✓ No                             |  |                                    |  |
| If Yes,V <sub>12a</sub> =  | pc/h           | (Equation 25        | -8)   |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)  |                                     |   |  |  |                                    |  |
| Capacity Ch  | ecks           |                     |   |  | Capacity   | y Ch                                | ecks  |  |  |                                    |  |
|  | Actual         | C                   | apacity   | LOS F?   |  |                                     | Actual  | Ca                                     | pacity                                       | LOS F                              |  |
|  |                |                     |   |  | V <sub>F</sub>                                   |                                     | 4446  | Exhibit 25-1                           | 4 6780                                       | No                                 |  |
| $V_{FO}$   |                | Exhibit 25-7        |   |  | $V_{FO} = V_{F}$                                 | - $V_R$                             | 3798  | Exhibit 25-1                           | 4 6780                                       | No                                 |  |
|  |                |                     |   |  | V <sub>R</sub>                                   |                                     | 648   | Exhibit 25-3                           | 3 2100                                       | No                                 |  |
| Flow Enterir   | na Merae Ir    | fluence A           | rea   |  | <u> </u>   | terii                               | na Dive                                       | rge Influen                            | ce Area                                      |                                    |  |
|  | Actual         | 1                   | Desirable   | Violation?   | - 10 11 = 11                                     | <u> </u>                            | Actual  | Max Desiral                            |  | Violation                          |  |
| V <sub>R12</sub>   |                | Exhibit 25-7        |   |  | V <sub>12</sub>                                  |                                     | 2999  | Exhibit 25-14                          | 4400:All                                     | No                                 |  |
| Level of Ser   | vice Deterr    |                     | f not F)  | •  |  | Ser                                 | vice De                                       | eterminatio                            | n (if not l                                  | =)                                 |  |
| $D_R = 5.475 + 0$  |                |                     |   |  | 1  |                                     |   | 0.0086 V <sub>12</sub> - 0.            | -  | •                                  |  |
| D <sub>R</sub> = (pc/m   |                | 12                  | ^   |  |  |                                     | /mi/ln)                                       | 14                                     | D  |                                    |  |
| • •  | bit 25-4)      |                     |   |  |  |                                     | bit 25-4)                                     |  |  |                                    |  |
| Speed Deter  |                |                     |   |  | Speed D  | •                                   |   | on                                     |  |                                    |  |
| $M_S = $ (Exibit:  |                |                     |   |  | <del>'                                    </del> |                                     | xhibit 25                                     |  |  |                                    |  |
| · ·  |                |                     |   |  | S <sub>R</sub> = 50.1 mph (Exhibit 25-19)        |                                     |   |  |  |                                    |  |
|  |                |                     |   |  | $S_0 = 59.7 \text{ mph (Exhibit 25-19)}$         |                                     |   |  |  |                                    |  |
|  | thibit 25-19)  |                     |   |  | S = 52.9 mph (Exhibit 25-15)                     |                                     |   |  |  |                                    |  |
|  | 111DIL 40-141  |                     |   |  | m.ı – 1/   | · ~ IIII)                           | * : 111 117                                   | Z : 1 = 1 : D 1                        |  |                                    |  |

|   |                            | IVAIVII                  | S AND RAM   |   |  |                  |           |  |                    |                                    |  |
|---|----------------------------|--------------------------|---|---|--|------------------|-----------|--|--------------------|------------------------------------|--|
| General In  |                            |                          |   | Site Infor  |  |                  |           |  |                    |                                    |  |
| Analyst<br>Agency or Comp<br>Date Performed<br>Analysis Time Pe | 02/1                       |                          | J   | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year | 1  | Exit 4 :<br>NYSD |           |  |                    |                                    |  |
| Project Descripti   | on Exit 4                  |                          |   | •   |  |                  |           |  |                    |                                    |  |
| Inputs  |                            |                          |   |   |  |                  |           |  |                    |                                    |  |
| Upstream Adj Ra   | ·                          | Terrain: Leve            | I   |   |  |                  |           |  | Downstrea<br>Ramp  | m Adj                              |  |
|   | On                         |                          |   |   |  |                  |           |  | ✓ Yes              | ✓ On                               |  |
| ™ No □  | Off                        |                          |   |   |  |                  |           |  | □ No               | ☐ Off                              |  |
| L <sub>up</sub> = ft  |                            | S                        | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$ |   |  |                  |           |  | dom                | 1820 ft                            |  |
| V <sub>u</sub> = ve   | h/h                        |                          | Sketch (  | show lanes, L <sub>A</sub>                                  | $L_{D'}V_{R'}V_{f}$                              |                  |           |  | v <sub>D</sub> –   | 1340 veh/                          |  |
| Conversio   | n to pc/h Un               | der Base (               | Conditions  |   |  |                  |           |  |                    |                                    |  |
| (pc/h)  | V<br>(Veh/hr)              | PHF                      | Terrain   | %Truck  | %Rv  |                  | $f_{HV}$  | f <sub>p</sub>                         | v = V/PHF          | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway   | 3900                       | 0.92                     | Level   | 2   | 0  | 0                | .990      | 1.00                                   | 428                | 32                                 |  |
| Ramp  | 1110                       | 0.92                     | Level   | 2   | 0  | 0                | .990      | 1.00                                   | 121                | 19                                 |  |
| UpStream  | 1240                       | 0.00                     | 1 1   | 1   | 0  | +                | 000       | 1.00                                   | 1.4-               | 10                                 |  |
| DownStream  | 1340                       | 0.93<br>Merge Areas      | Level   | 4   | 0  | 0                | .980      | 1.00<br>Diverge Areas                  | 147                | 70                                 |  |
| Estimation  | of v                       | Mei ge Areas             |   |   | Estimati   | ion d            |           | Diverge Areas                          |                    |                                    |  |
|   |                            | (D.)                     |   |   | Lotimati   |                  |           | \                                      | \D                 |                                    |  |
| $V_{12} = V_F (P_{FM})$   |                            |                          |   |   |  |                  |           | = V <sub>R</sub> + (V <sub>F</sub> - V |                    |                                    |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                       |                            |                          |   |   | L <sub>EQ</sub> =                                |                  |           | Equation 25-8                          |                    |                                    |  |
| P <sub>FM</sub> =   | _                          | g Equation (E            | xhibit 25-5)  |   | P <sub>FD</sub> =                                |                  |           | .597 using Ed                          | uation (Exhi       | bit 25-12)                         |  |
| V <sub>12</sub> =   | pc/h                       |                          |   |   | V <sub>12</sub> =                                |                  |           | 047 pc/h                               |                    |                                    |  |
| V <sub>3</sub> or V <sub>av34</sub>                             |                            | (Equation 25             | 5-4 or 25-5)  |   | V <sub>3</sub> or V <sub>av34</sub>              |                  |           | 235 <b>pc/h (Eq</b> u                  | ation 25-15        | or 25-16                           |  |
| 0 4101  | 2,700 pc/h?                |                          |   |   |  |                  |           | Yes Mo                                 |                    |                                    |  |
|   | 1.5 * V <sub>12</sub> /2   |                          |   |   |  |                  |           | Yes ☑ No                               |                    |                                    |  |
| If Yes,V <sub>12a</sub> =                                       |                            | (Equation 25             | 5-8)  |   | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18) |                  |           |  |                    |                                    |  |
| Capacity C  | 1                          |                          |   | _   | Capacity   | y Ch             |           |  |                    |                                    |  |
|   | Actual                     | C                        | apacity   | LOS F?  |  |                  | Actual    |  | pacity             | LOS F                              |  |
|   |                            |                          |   |   | V <sub>F</sub>                                   |                  | 4282      | Exhibit 25-1                           | 4 6780             | No                                 |  |
| $V_{FO}$  |                            | Exhibit 25-7             |   |   | $V_{FO} = V_{F}$                                 | - V <sub>R</sub> | 3063      | Exhibit 25-1                           | 4 6780             | No                                 |  |
|   |                            |                          |   |   | $V_R$  |                  | 1219      | Exhibit 25-3                           | 2100               | No                                 |  |
| Flow Enter  | ing Merge li               | nfluence A               | rea   |   | Flow En  | terir            | ng Dive   | rge Influen                            | ce Area            |                                    |  |
|   | Actual                     |                          | Desirable   | Violation?  |  | 1                | Actual    | Max Desiral                            |                    | Violation                          |  |
| $V_{R12}$   |                            | Exhibit 25-7             |   |   | V <sub>12</sub>                                  |                  | 3047      | Exhibit 25-14                          | 4400:All           | No                                 |  |
| Level of Se   | ervice Deter               | mination (               | if not F)   |   | Level of   | Ser              | vice De   | terminatio                             | n (if not l        | <del>-</del> )                     |  |
| $D_{R} = 5.475 -$   | + 0.00734 v <sub>R</sub> + | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>                                  |   |  | $D_R = 4$        | 4.252 + 0 | .0086 V <sub>12</sub> - 0.             | 009 L <sub>D</sub> |                                    |  |
| D <sub>R</sub> = (pc/   | mi/ln)                     |                          |   |   | D <sub>R</sub> = 24                              | l.2 (pc          | :/mi/ln)  |  |                    |                                    |  |
| LOS = (Ex   | hibit 25-4)                |                          |   |   | LOS = C  | (Exhi            | bit 25-4) |  |                    |                                    |  |
| Speed Det   | ermination                 |                          |   |   | Speed D  | Deter            | minati    | on                                     |                    |                                    |  |
|   | it 25-19)                  |                          |   |   | D <sub>s</sub> = 0.4                             | 473 (E           | xhibit 25 | -19)                                   |                    |                                    |  |
| ľ   | Exhibit 25-19)             |                          |   |   | S <sub>R</sub> = 49.4 mph (Exhibit 25-19)        |                  |           |  |                    |                                    |  |
| $S_0$ = mph (Exhibit 25-19)                                     |                            |                          |   |   | S <sub>0</sub> = 60.5 mph (Exhibit 25-19)        |                  |           |  |                    |                                    |  |
| 1   | Exhibit 25-14)             |                          |   |   | S = 52.1 mph (Exhibit 25-15)                     |                  |           |  |                    |                                    |  |
|   |                            |                          |   |   |  |                  |           |  |                    |                                    |  |

|   | RAI                                | MPS AND                       | RAMP JUNG           | CTIONS W   | /ORKSHI  | EET                        |                         |                                     |                                |  |
|---|------------------------------------|-------------------------------|---------------------|--|--|----------------------------|-------------------------|-------------------------------------|--------------------------------|--|
| General Infor   |                                    |                               |                     | Site Infor   |  |                            |                         |                                     |                                |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | SEB<br>CHA<br>02/15<br>d PM        |                               | Fre<br>Jui<br>Jui   | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | Travel Southbound I-87 Exit 4 SB On-Ramp NYSDOT 2036 Diamond |                            |                         |                                     |                                |  |
| Project Description   | Exit 4                             |                               |                     |  |  |                            |                         |                                     |                                |  |
| Inputs  |                                    | Transia I aval                |                     |  |  |                            |                         |                                     |                                |  |
| Upstream Adj Ramp   |                                    | Terrain: Level                |                     |  |  |                            |                         | Downstro<br>Ramp                    | eam Adj                        |  |
| ✓ Yes ☐ Or  | 1                                  |                               |                     |  |  |                            |                         | ☐ Yes                               | E 0.                           |  |
| □ No    ○ Of  | f                                  |                               |                     |  |  |                            |                         |                                     | □ On                           |  |
|   | •                                  |                               |                     |  |  |                            |                         | Mo No                               | ☐ Off                          |  |
| <sub>-up</sub> = 1820   | ft                                 |                               | F/ 0 l              |  |  | 10.0                       |                         | L <sub>down</sub> =                 | ft                             |  |
| $V_{u} = 1110^{-3}$   | /eh/h                              | 5                             | FF = 56.0 mph       | ا موسولييوماد  | $S_{FR} = 4$   | .u.u mpn                   |                         | $V_D =$                             | veh/h                          |  |
|   |                                    | / D C                         |                     | show lanes, L <sub>A</sub>                             | , L <sub>D</sub> , V <sub>R</sub> , V <sub>f</sub> )         |                            |                         |                                     |                                |  |
| Conversion t  | o pc/n Und<br>I ∨                  |                               | onaitions           |  | <u> </u>   | 1                          | 1                       |                                     |                                |  |
| (pc/h)  | v<br>(Veh/hr)                      | PHF                           | Terrain             | %Truck   | %Rv  | f <sub>HV</sub>            | f <sub>p</sub>          | v = V/PH                            | $F \times f_{HV} \times f_{p}$ |  |
| Freeway   | 2800                               | 0.92                          | Level               | 2  | 0  | 0.990                      | 1.00                    |                                     | 3074                           |  |
| Ramp  | 1340                               | 0.93                          | Level               | 4  | 0  | 0.980                      | 1.00                    |                                     | 1470                           |  |
| UpStream  | 1110                               | 0.92                          | Level               | 2  | 0  | 0.990                      | 1.00                    |                                     | 1219                           |  |
| DownStream  | <u> </u>                           | Merge Areas                   |                     |  | <del> </del>   |                            | Diverge Ar              | 7025                                |                                |  |
| Estimation o  |                                    | iviei ge Ai eas               |                     |  | Estimat  | ion of v <sub>12</sub>     |                         | cas                                 |                                |  |
|   |                                    | (D )                          |                     |  |  | 1011 01 1 12               |                         |                                     |                                |  |
|   | $V_{12} = V_F$                     |                               | a= a = a;           |  |  | V <sub>12</sub>            | $= V_R + (V_F)$         | - V <sub>R</sub> )P <sub>FD</sub>   |                                |  |
| L <sub>EQ</sub> = 1241.64 (Equation 25-2 or 25-3)                     |                                    |                               |                     |  | L <sub>EQ</sub> =  |                            | (Equation               | n 25-8 or 25-                       | ·9)                            |  |
| P <sub>FM</sub> =   |                                    |                               | on (Exhibit 25-5)   |  | P <sub>FD</sub> =  |                            | using Eq                | uation (Exhibi                      | t 25-12)                       |  |
| / <sub>12</sub> =   | 1888                               |                               | - OF 4 or OF        |  | V <sub>12</sub> =  |                            | pc/h                    |                                     |                                |  |
| $V_3$ or $V_{av34}$   | 5)                                 | pc/h (Equatio                 | 11 25-4 01 25-      |  | $V_3$ or $V_{av34}$  |                            |                         | ation 25-15 or 2                    | 5-16)                          |  |
| Is $V_3$ or $V_{av34} > 2,70$   |                                    | s 🗹 No                        |                     |  |  | <sub>34</sub> > 2,700 pc/h |                         |                                     |                                |  |
| Is $V_3$ or $V_{av34} > 1.5$  |                                    |                               |                     |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No               |                            |                         |                                     |                                |  |
| f Yes,V <sub>12a</sub> =  | pc/h                               | (Equation 25                  | -8)                 |  | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18)             |                            |                         |                                     |                                |  |
| Capacity Che  | ecks                               |                               |                     |  | Capacity Checks  |                            |                         |                                     |                                |  |
|   | Actual                             | Ca                            | ıpacity             | LOS F?   | ļ  | Actı                       | ıal                     | Capacity                            | LOS F                          |  |
|   |                                    |                               |                     |  | V <sub>F</sub>   |                            | Exhibi                  | t 25-14                             |                                |  |
| $V_{FO}$  | 4544                               | Exhibit 25-7                  |                     | No   | $V_{FO} = V_{F}$   | - V <sub>R</sub>           | Exhibi                  | t 25-14                             |                                |  |
|   |                                    |                               |                     |  | $V_R$  |                            | Exhibi                  | t 25-3                              |                                |  |
| Flow Entering   | g Merge In                         | fluence A                     | rea                 |  | Flow En  | tering Di                  | verge Infl              | luence Ar                           | ea                             |  |
|   | Actual                             |                               | )esirable           | Violation?   |  | Actual                     | 7                       | Desirable                           | Violation?                     |  |
| V <sub>R12</sub>  | 3358                               | Exhibit 25-7                  | 4600:All            | No   | V <sub>12</sub>  |                            | Exhibit 25              |                                     |                                |  |
| Level of Serv   |                                    |                               |                     |  |  |                            |                         | ation (if n                         | ot F)                          |  |
| $D_{R} = 5.475 +$   | 0.00734 v <sub>R</sub> + 0         | 0.0078 V <sub>12</sub> - 0.00 | 0627 L <sub>A</sub> |  |  | $D_{R} = 4.252$            | + 0.0086 V <sub>1</sub> | <sub>2</sub> - 0.009 L <sub>D</sub> |                                |  |
| $O_{R} = 22.8 \text{ (pc)}$   | :/mi/ln)                           |                               |                     |  | ''   | c/mi/ln)                   |                         |                                     |                                |  |
| .OS = C (Exhi   |                                    |                               |                     |  | LOS = (E   | xhibit 25-4)               |                         |                                     |                                |  |
| Speed Deteri  | nination                           |                               |                     |  |  | Determina                  | tion                    |                                     |                                |  |
| $M_{\rm S} = 0.329  (Ex)$   | bit 25-19)                         |                               |                     |  | $D_s = (E_s)^T$  | xhibit 25-19)              |                         |                                     |                                |  |
| "S 0.327 (LX  | (F           OF   40)              |                               |                     |  | $S_R = m$  | ph (Exhibit 25-            | 19)                     |                                     |                                |  |
| $S_R = 51.4 \text{ mph}$  | (Exhibit 25-19)                    |                               |                     |  | к  |                            | -                       |                                     |                                |  |
| S <sub>R</sub> = 51.4 mph   | (Exhibit 25-19)<br>(Exhibit 25-19) |                               |                     |  |  | ph (Exhibit 25-            |                         |                                     |                                |  |

|  | RA                               | MPS AND                      | RAMP JUNG                | CTIONS W   | ORKSHE   | EET  |           |                                      |                      |                                      |
|--|----------------------------------|------------------------------|--------------------------|--|--|--|-----------|--------------------------------------|----------------------|--------------------------------------|
| General Info   |                                  |                              |                          | Site Infor   |  |  |           |                                      |                      |                                      |
| Analyst<br>Agency or Compar<br>Date Performed<br>Analysis Time Peri<br>Project Descriptior | 02/1<br>od PM                    |                              | Fre<br>Jui<br>Jui        | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | avel   | Southbou<br>Exit 5 SB<br>NYSDOT<br>2036 Diar   | On-Ram    | р                                    |                      |                                      |
| Inputs   | LAIL T                           |                              |                          |  |  |  |           |                                      |                      |                                      |
| Upstream Adj Ram   | ip                               | Terrain: Leve                | I                        |  |  |  |           |                                      | Downstre<br>Ramp     | am Adj                               |
| □ Yes □ C  | On                               |                              |                          |  |  |  |           |                                      | ✓ Yes                | □ On                                 |
| ☑ No ☐ C   | Off                              |                              |                          |  |  |  |           |                                      | □ No                 | ✓ Off                                |
| $L_{up} = ft$  |                                  | S                            | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4                              | 0.0 mph  |           |                                      | L <sub>down</sub> =  | 6100 ft                              |
| V <sub>u</sub> = veh   | /h                               |                              | Sketch (s                | show lanes, L <sub>A</sub>                             | $L_{D'}V_{R'}V_{f}$                              |  |           |                                      | $V_D =$              | 1110 veh/l                           |
| Conversion   | to pc/h Un                       | der Base (                   | Conditions               |  |  |  |           |                                      |                      |                                      |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                          | Terrain                  | %Truck   | %Rv  | f <sub>H\</sub>  | /         | f <sub>p</sub>                       | v = V/PH             | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 3150                             | 0.92                         | Level                    | 2  | 0  | 0.990  | _         | 1.00                                 |                      | 3458                                 |
| Ramp<br>UpStream   | 730                              | 0.87                         | Level                    | 1  | 0  | 0.995  | 5         | 1.00                                 |                      | 843                                  |
| DownStream   | 1110                             | 0.92                         | Level                    | 2  | 0  | 0.990  | )         | 1.00                                 |                      | 1219                                 |
| 20   |                                  | Merge Areas                  | 20001                    |  | †  | 0.770  |           | iverge Areas                         |                      | 1217                                 |
| Estimation (   |                                  |                              |                          |  | Estimat  | ion of   |           |                                      |                      |                                      |
|  | V <sub>12</sub> = V <sub>F</sub> | ( P <sub>EM</sub> )          |                          |  | †  |  |           | / . (\/ \/                           | / \D                 |                                      |
| L <sub>EQ</sub> =  |                                  |                              | 25-2 or 25-3)            |  | _  |  |           | / <sub>R</sub> + (V <sub>F</sub> - V |                      | ۵۱                                   |
| P <sub>FM</sub> =  |                                  |                              | ion (Exhibit 25-5)       |  | L <sub>EQ</sub> =                                |  |           | Equation 25                          |                      |                                      |
| / <sub>12</sub> =  | 2123                             |                              | 1011 (EXIIIDII 20 0)     |  | P <sub>FD</sub> =                                |  |           | ising Equat                          | ion (Exnibit         | 25-12)                               |
|  |                                  | -                            | on 25-4 or 25-           |  | V <sub>12</sub> =                                |  | -         | oc/h<br>//- /=                       | 25 15 20             | - 1/\                                |
| $V_3$ or $V_{av34}$  | 5)                               |                              |                          |  | V <sub>3</sub> or V <sub>av34</sub>              | or $V_{av34}$ pc/h (Equation 25-15 or 25-16)<br>$V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |           |                                      |                      |                                      |
| Is $V_3$ or $V_{av34} > 2$ ,   |                                  |                              |                          |  | Is $V_3$ or $V_{av34} > 2.760$ pcm; Yes No       |  |           |                                      |                      |                                      |
| Is $V_3$ or $V_{av34} > 1$ .   |                                  |                              |                          |  |  |  |           |                                      |                      |                                      |
| f Yes,V <sub>12a</sub> =   |                                  | (Equation 25                 | 5-8)                     |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)  |  |           |                                      |                      |                                      |
| Capacity Ch  | ecks                             |                              |                          |  | Capacit  | y Chec   | cks       |                                      |                      |                                      |
|  | Actual                           | C                            | apacity                  | LOS F?   | <u> </u>   |  | Actual    |                                      | apacity              | LOS F?                               |
|  |                                  |                              |                          |  | V <sub>F</sub>                                   |  |           | Exhibit 25                           | -14                  |                                      |
| $V_{FO}$   | 4301                             | Exhibit 25-7                 |                          | No   | $V_{FO} = V_{F}$                                 | - V <sub>R</sub>   |           | Exhibit 25                           | -14                  |                                      |
|  |                                  |                              |                          | <u> </u>   | V <sub>R</sub>                                   |  |           | Exhibit 25                           | 5-3                  |                                      |
| Flow Enterii   | ng Merge li                      |                              |                          |  | Flow En  | tering   | Diver     | ge Influe                            |                      |                                      |
|  | Actual                           |                              | Desirable                | Violation?   | <del>                                     </del> | Actu   |           | Max Des                              | irable<br>I          | Violation?                           |
| V <sub>R12</sub>   | 2966                             | Exhibit 25-7                 | 4600:All                 | No   | V <sub>12</sub>                                  | <u></u>  |           | Exhibit 25-14                        |                      | <u> </u>                             |
| Level of Ser   |                                  |                              |                          |  |  |  |           | terminati                            | •                    | ot F)                                |
|  | + 0.00734 V <sub>R</sub> +       | v.vv/8 V <sub>12</sub> - 0.0 | JU62/ L <sub>A</sub>     |  |  |  | 252 + 0.  | 0086 V <sub>12</sub> -               | υ.009 L <sub>D</sub> |                                      |
| $D_{R} = 20.1 (pc/mi/ln)$  |                                  |                              |                          | D <sub>R</sub> = (pc/mi/ln)                            |  |  |           |                                      |                      |                                      |
|  |                                  |                              |                          |  | xhibit 2   |  | <u> </u>  |                                      |                      |                                      |
| •  |                                  |                              |                          |  | Speed L  |  |           | ori                                  |                      |                                      |
|  | xibit 25-19)                     |                              |                          |  | $D_s = (Exhibit 25-19)$                          |  |           |                                      |                      |                                      |
| **   | h (Exhibit 25-19)                |                              |                          |  | '`   | ph (Exhibi   |           |                                      |                      |                                      |
| S <sub>0</sub> = 53.0 mp   | h (Exhibit 25-19)                |                              |                          |  | $S_0 = m$  | ph (Exhibi   | it 25-19) |                                      |                      |                                      |
|  | h (Exhibit 25-14)                |                              |                          |  | S = m  | ph (Exhibi   |           |                                      |                      |                                      |

|  |   |                            | FREEWA         | Y WEAV   | ING WOR        | KSHEE             | T   |                |              |  |
|--|---|----------------------------|----------------|--|----------------|-------------------|---|----------------|--------------|--|
| Genera   | l Informat  | ion                        |                |  | Site Info      | rmation           |   |                |              |  |
| Analyst SEB Agency/Company CHA Date Performed 02/15/12 Analysis Time Period PM |   |                            |                | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | Exit 2<br>NYSE    | I-87 Northbound<br>Exit 2E on to 2W off<br>NYSDOT<br>2036 Diamond |                |              |  |
| Inputs   |   |                            |                |  |                |                   |   |                |              |  |
| Weaving no<br>Weaving so<br>Terrain  | reeway free-flow speed, S <sub>FF</sub> (mi/h) 56 Veaving number of lanes, N 4 Veaving seg length, L (ft) 815 |                            | el             | Weaving type<br>Volume ratio, VR<br>Weaving ratio, R       |                | A<br>0.23<br>0.34 |   |                |              |  |
| Conver   | sions to p  | c/h Unde                   | er Base C      | ondition   | _              |                   | _   | 1              |              |  |
| (pc/h)   | V   | PHF                        | Truck %        | RV %   | E <sub>T</sub> | E <sub>R</sub>    | $f_{HV}$  | fp             | V            |  |
| $V_{o1}$   | 4240  | 0.86                       | 2              | 0  | 1.5            | 1.2               | 0.990   | 1.00           | 4979         |  |
| $V_{o2}$   | 0   | 0.92                       | 2              | 0  | 1.5            | 1.2               | 0.990   | 1.00           | 0            |  |
| V <sub>w1</sub>  | 880   | 0.92                       | 2              | 0  | 1.5            | 1.2               | 0.990   | 1.00           | 966          |  |
| $V_{w2}$   | 460   | 0.92                       | 2              | 0  | 1.5            | 1.2               | 0.990   | 1.00           | 504          |  |
| V <sub>w</sub>   | 7   |                            |                | 1470   | $V_{nw}$       |                   |   | Į.             | 4979         |  |
| V  |   |                            |                |  |                | l                 |   |                | 6449         |  |
| Weavin   | g and No  | n-Weavin                   | g Speeds       | <u> </u>   |                |                   |   |                |              |  |
|  |   |                            | Unconstr       |  |                |                   |   | trained        |              |  |
| /E 1 11 11 0   |   | Weaving                    |                | 1  | ving (i = nw)  | Weavi             | ng (i = w)  | Non-Wea        | ving ( = nw) |  |
| a (Exhibit 2<br>b (Exhibit 2   |   | 0.15                       |                | <del></del>  | .00            |                   |   |                |              |  |
| c (Exhibit 2   |   | 0.9                        |                | <del></del>  | .30            |                   |   |                |              |  |
| d (Exhibit 2   |   | 0.80                       |                | <del> </del>   | .75            |                   |   | ĺ              |              |  |
| Weaving inten  |   | 1.43                       | 3              | 0  | .77            |                   |   |                |              |  |
| Weaving and r<br>speeds, Si (mi  |   | 33.9                       | 5              | 40   | ).97           |                   |   |                |              |  |
| Number of  | lanes required number of lanes  |                            | ned operation, | , Nw   | 1.30<br>1.40   |                   |   | •              |              |  |
|  | If Nw < Nw  | , ,                        |                |  |                |                   | v (max) const   | rained operati | on           |  |
| Weavin   | ıg Segmei   | nt Speed,                  | Density,       |  | f Service,     | and Cap           | pacity  |                |              |  |
| Weaving se   | egment speed,   | S (mi/h)                   |                | 39.13  |                |                   |   |                |              |  |
| Weaving segment density, D (pc/mi/ln)  |   |                            |                | 41.20  |                |                   |   |                |              |  |
| Level of service, LOS  |   |                            | Е              |  |                |                   |   |                |              |  |
| Capacity of base condition, c <sub>b</sub> (pc/h)                              |   |                            | 6588           |  |                |                   |   |                |              |  |
| Capacity as  | s a 15-minute fl  | ow rate, c (vel            | n/h)           | 6523   |                |                   |   |                |              |  |
| Capacity as  | s a full-hour vol   | ume, c <sub>h</sub> (veh/h | n)             | 5704   |                |                   |   |                |              |  |
| Notes  |   |                            |                |  |                |                   |   |                |              |  |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  |  |                             | FREEWA   | Y WEAV                          | ING WOR  | RKSHEE            | Τ               |   |              |  |  |
|--|--|-----------------------------|--|---------------------------------|--|-------------------|-----------------|---|--------------|--|--|
| Genera   | l Informat   | ion                         |  |                                 | Site Info  | rmation           |                 |   |              |  |  |
| Date Perfor  | Agency/Company CHA Date Performed 02/15/12 Analysis Time Period PM |                             |  |                                 | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | g Location        | Exit 21<br>NYSD | I-87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2036 Diamond |              |  |  |
| Inputs   |  |                             |  |                                 |  |                   |                 |   |              |  |  |
| Freeway free-flow speed, S <sub>FF</sub> (mi/h) 56  Weaving number of lanes, N 4  Weaving seg length, L (ft) 810  Terrain Leve |  | el                          | Weaving type<br>Volume ratio, VR<br>Weaving ratio, R |                                 |  | A<br>0.20<br>0.11 |                 |   |              |  |  |
| Conver   | sions to p   | 1                           | r Base C   | 1                               |  | 1                 | <u> </u>        |   |              |  |  |
| (pc/h)   | V  | PHF                         | Truck %  | RV %                            | E <sub>T</sub>   | E <sub>R</sub>    | f <sub>HV</sub> | fp  | V            |  |  |
| V <sub>o1</sub>  | 3360   | 0.92                        | 2  | 0                               | 1.5  | 1.2               | 0.990           | 1.00  | 3688         |  |  |
| $V_{02}$   | 0  | 0.92                        | 2  | 0                               | 1.5  | 1.2               | 0.990           | 1.00  | 0            |  |  |
| $V_{w1}$   | 750  | 0.92                        | 2  | 0                               | 1.5  | 1.2               | 0.990           | 1.00  | 823          |  |  |
| $V_{w2}$   | 90   | 0.92                        | 2  | 0                               | 1.5  | 1.2               | 0.990           | 1.00  | 98           |  |  |
| $V_{_{ m W}}$  |  |                             | _  | 921                             | V <sub>nw</sub>  |                   | •               | •   | 3688         |  |  |
| V  |  |                             |  |                                 | •  | •                 |                 |   | 4609         |  |  |
| Weavin   | g and No   | n-Weavin                    | g Speeds   | 5                               |  |                   |                 |   |              |  |  |
|  |  |                             | Unconstr   | 4                               |  |                   |                 | trained   |              |  |  |
| a (Exhibit 2   | 1 6  | Weaving<br>0.15             |  | Non-Weaving (i = nw) Wea 0.0035 |  |                   | ng (i = w)      | Non-Wea   | ving ( = nw) |  |  |
| b (Exhibit 2   |  | 2.20                        |  | 4.00                            |  |                   |                 |   |              |  |  |
| c (Exhibit 2   |  | 0.97                        |  | <u> </u>                        | 30   |                   |                 |   |              |  |  |
| d (Exhibit 2   | •  | 0.80                        | )  | 0.                              | 75   |                   |                 |   |              |  |  |
| Weaving intens Weaving and n   | •  | 0.98                        |  |                                 | 46   |                   |                 |   |              |  |  |
| speeds, Si (mi/  | h)   | 38.1                        |  |                                 | .59  |                   |                 |   |              |  |  |
| Maximum r  | lanes required<br>number of lanes<br>If Nw < Nw                    | s, Nw (max)<br>(max) uncons | trained operat                                       | ion                             | 1.15<br>1.40   |                   | v (max) constr  | ained operat  | ion          |  |  |
|  | g Segmer   |                             |  |                                 | Service,   | and Cap           | acity           |   |              |  |  |
| i  |  |                             |  | 44.63                           |  |                   |                 |   |              |  |  |
| Weaving segment density, D (pc/mi/ln) Level of service, LOS  |  |                             |  | 25.82 C                         |  |                   |                 |   |              |  |  |
|  |  |                             |  | 6736                            |  |                   |                 |   |              |  |  |
| Capacity of base condition, c <sub>b</sub> (pc/h)  Capacity as a 15-minute flow rate, c (veh/h)                                |  |                             |  | 6669                            |  |                   |                 |   |              |  |  |
| <u> </u>   | s a full-hour vol  |                             |  | 6135                            |  |                   |                 |   |              |  |  |
| Notes  |  | n (- 3. // )                | <u>,                                      </u>       | 1 5.55                          |  |                   |                 |   |              |  |  |
| 10103  |  |                             |  |                                 |  |                   | , , , , , ,     |   |              |  |  |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  | BASIC F   | REEWAY SE        | EGMENTS W   | ORKSHEET   |  |   |
|--|---|------------------|---|--|--|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 60 mith 55 mith 50 LOS A 10 LOS A 10 LOS A 20 0 400 800 | B C C S   | 1600 200         | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO<br>FFS, LO<br>FFS, N,<br>FFS, LO | S, V <sub>p</sub> N, S, D<br>S, N V <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D            |
| General Information  | Flow Rate (pc/h/lir   | )                | Site Inforn   | nation   |  |   |
| Analyst<br>Agency or Company   | SEB<br>CHA  |                  | Highway/Dire<br>From/To   | ction of Travel  |  | to Exit 4 on  |
| Date Performed<br>Analysis Time Period   | 02/15/12<br>PM  |                  | Jurisdiction<br>Analysis Year   | r  | NYSDOT<br>2046 Dia   |   |
| Project Description Exit 4  Oper.(LOS)   |   | Г                | Des.(N)   |  | □ Plar   | nning Data  |
| Flow Inputs  |   |                  | ( )   |  |  | 3   |
| Volume, V<br>AADT  | 4500  | veh/h<br>veh/day | Peak-Hour Fa<br>%Trucks and   |  | 0.86<br>2  |   |
| Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment            | 1.00  | veh/h            | %RVs, P <sub>R</sub><br>General Terra<br>Grade %                                      | ain:<br>Length<br>Up/Down %  | 0<br>Level<br>mi   |   |
| Calculate Flow Adjustr   |   |                  | •   | ор/Down 78   |  |   |
| f <sub>p</sub>   | 1.00  |                  | E <sub>R</sub>  |  | 1.2  |   |
| E <sub>T</sub>   | 1.5   |                  |   | <sub>r</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990  |   |
| Speed Inputs   |   |                  |   | d Adj and FFS  | <u> </u>   |   |
| Lane Width   | 12.0  | ft               |   |  |  | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0   | ft               | f <sub>LW</sub>   |  |  |   |
| Interchange Density  | 0.50  | I/mi             | f <sub>LC</sub>   |  |  | mi/h  |
| Number of Lanes, N   | 3   |                  | $f_{ID}$  |  |  | mi/h  |
| FFS (measured)   | 56.0  | mi/h             | $f_N$   |  |  | mi/h  |
| Base free-flow Speed, BFFS   | 00.0  | mi/h             | FFS   |  | 56.0   | mi/h  |
| LOS and Performance  | Measures  |                  | Design (N)  | <u> </u>   |  |   |
| Operational (LOS)<br>$V_p = (V \text{ or DDHV}) / (PHF x N)$   | x f <sub>Liv</sub> x  | n o /h // o      | <u>Design (N)</u><br>Design LOS   |  | £  |   |
| f <sub>p</sub> )   | <sup>⊓v</sup> 1762  | pc/h/ln          | 1.5   | HV) / (PHF x N x   | I <sub>HV</sub> X  | pc/h  |
| S  | 56.0  | mi/h             | f <sub>p</sub> )<br>S   |  |  | mi/h  |
| $D = v_p / S$  | 31.5  | pc/mi/ln         | $D = v_p / S$   |  |  | pc/mi/ln  |
| LOS  | D   |                  | '   | mber of Lanes, N   |  | Pommin  |
| Glossary   |   |                  | Factor Loc  |  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service                  | S - Speed<br>D - Density<br>FFS - Free-flow<br>BFFS - Base fr |                  | E <sub>R</sub> - Exhibits2<br>E <sub>T</sub> - Exhibits2<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1<br>12   |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design ho   | our volume  |                  |   | v <sub>p</sub> - Exhibits 23-2   | _,   | ID - EXHIBIT 23-7   |
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|  | BASIC F  | REEWAY SE                 | GMENTS W  | ORKSHEET   |  |  |
|--|--|---------------------------|---|--|--|--|
| S0   Free-Flow Speed   FFS = 75 migh   70 migh   70 migh   65 migh   60 migh   55 migh   50   10 | B C  | 450<br>(500)<br>1750<br>0 |   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS | S, V <sub>p</sub> N, S, D<br>S, N V <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D |
| <b>0</b> 400 800   | 1200<br>Flow Rate (pc/h/lin                      | 1600 2000<br>)            | 2400  |  |  |  |
| General Information  |  |                           | Site Inform   |  |  |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4         | SEB<br>CHA<br>02/15/12<br>PM                     |                           | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea | ection of Travel   | Southbou<br>Exit 4 off<br>NYSDOT<br>2046 Dia                     | to Exit 4 on   |
| ✓ Oper.(LOS)   |  | П                         | Des.(N)   |  | ☐ Plan   | ning Data  |
| Flow Inputs  |  |                           | ( )   |  |  | <u> </u>   |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K  | 2750   | veh/h<br>veh/day          | Peak-Hour Face Strucks and RVs, P <sub>R</sub>          |  | 0.92<br>2<br>0   |  |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment                             | 1.00   | veh/h                     | General Terra<br>Grade %                                | ain:<br>Length<br>Up/Down %  | Level<br>mi  |  |
| Calculate Flow Adjustr   | nents  |                           |   | •  |  |  |
| fp   | 1.00   |                           | E <sub>R</sub>  |  | 1.2  |  |
| E <sub>T</sub>   | 1.5  |                           | f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E                | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |  |
| Speed Inputs   |  |                           | Calc Spee   | d Adj and FFS  | ;  |  |
| Lane Width   | 12.0   | ft                        | f <sub>LW</sub>   |  |  | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft                        |   |  |  | mi/h   |
| Interchange Density  | 0.50   | I/mi                      | f <sub>LC</sub>   |  |  |  |
| Number of Lanes, N   | 3  |                           | f <sub>ID</sub>   |  |  | mi/h   |
| FFS (measured)   | 56.0   | mi/h                      | t <sub>N</sub>  |  |  | mi/h   |
| Base free-flow Speed, BFFS   |  | mi/h                      | FFS   |  | 56.0   | mi/h   |
| LOS and Performance  | Measures   |                           | Design (N   | )  |  |  |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N :                                   |  | pc/h/ln                   | Design (N)<br>Design LOS                                | DHV) / (PHF x N x :  | f <sub>uv</sub> x  |  |
| f <sub>p</sub> )   |  | F 5/ 1 // 11              | f <sub>p</sub> )  | .,, (  | HV   | pc/h   |
| S  | 56.0   | mi/h                      | S   |  |  | mi/h   |
| $D = v_p / S$  | 18.0   | pc/mi/ln                  | $D = v_p / S$   |  |  | pc/mi/ln   |
| LOS  | В  |                           | F   | mber of Lanes, N   |  | 10 0, ,  |
| Glossary   |  |                           | Factor Lo   |  |  |  |
| N - Number of lanes  | S - Speed  |                           | E <sub>R</sub> - Exhibits:                              |  |  | f <sub>LW</sub> - Exhibit 23-4   |
| V - Hourly volume<br>v <sub>p</sub> - Flow rate<br>LOS - Level of service                        | D - Density<br>FFS - Free-flow<br>BFFS - Base fr |                           | E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23-  | 23-8, 23-10, 23-1 <sup>-1</sup><br>12  |  | f <sub>LC</sub> - Exhibit 23-5<br>f <sub>N</sub> - Exhibit 23-6                              |
| DDHV - Directional design ho   | our volume                                       |                           | LUS, S, FFS   | , v <sub>p</sub> - Exhibits 23-2   | ۷, ∠۵-۵  | f <sub>ID</sub> - Exhibit 23-7   |
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|  | BASIC F  | REEWAY SE                          | EGMENTS V   | VORKSHEET  |   |   |
|--|--|------------------------------------|---|--|---|---|
| S0   Free-Flow Spzed FFS = 75 mith   70 mith   70 mith   70 mith   65 mith   60 mith   55 mith   55 mith   50   LÖS A   10   10   10   10   10   10   10 | B C C  | 150<br>1750<br>1750<br>1600<br>200 | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v <sub>p</sub><br>FFS, LOS, v<br>FFS, LOS, N<br>FFS, N, AAU<br>FFS, LOS, N | v <sub>p</sub> , S, D<br>ot los, S, D<br>adt N, S, D            |
| General Information  |  | 43                                 | Site Infor  | mation   |   |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>PM                         |                                    |   | ection of Travel   | Northbound<br>Exit 4 to Exi<br>NYSDOT<br>2046 Diamo   | t 5   |
| ✓ Oper.(LOS)   |  | П                                  | Des.(N)   |  | ☐ Plannir   | ng Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D  | 5800   | veh/h<br>veh/day<br>veh/h          | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Teri<br>Grade % | d Buses, P <sub>T</sub> rain: Length   | 0.86<br>2<br>0<br>Level<br>mi   |   |
| Driver type adjustment   | 1.00   |                                    |   | Up/Down %  |   |   |
| Calculate Flow Adjustr   |  |                                    |   |  | 4.0   |   |
| f <sub>p</sub>   | 1.00   |                                    | E <sub>R</sub>  | 5 (5)  | 1.2   |   |
| E <sub>T</sub>   | 1.5  |                                    |   | ed Adj and FFS   | 0.990   |   |
| Speed Inputs  Lane Width  Rt-Shoulder Lat. Clearance Interchange Density  Number of Lanes, N  FFS (measured)   | 12.0<br>6.0<br>0.50<br>3<br>56.0                     | ft<br>ft<br>I/mi<br>mi/h           | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub>                | su Auj aliu i i o  |   | mi/h<br>mi/h<br>mi/h<br>mi/h                                    |
| Base free-flow Speed, BFFS   |  | mi/h                               | FFS   |  | 56.0  | mi/h  |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ )  S $D = v_p / S$ LOS   |  | pc/h/ln<br>mi/h<br>pc/mi/ln        | $f_p$ )<br>S<br>D = $v_p$ / S   |  | f <sub>HV</sub> x   | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |  |                                    | Factor Lo   | cation   |   |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho                                     | S - Speed D - Density FFS - Free-flow BFFS - Base fr |                                    | E <sub>R</sub> - Exhibits E <sub>T</sub> - Exhibits f <sub>p</sub> - Page 23  | s23-8, 23-10<br>s 23-8, 23-10, 23-1  | 1 f <sub>L</sub> (  | N - Exhibit 23-4 C - Exhibit 23-5 - Exhibit 23-6 - Exhibit 23-7 |
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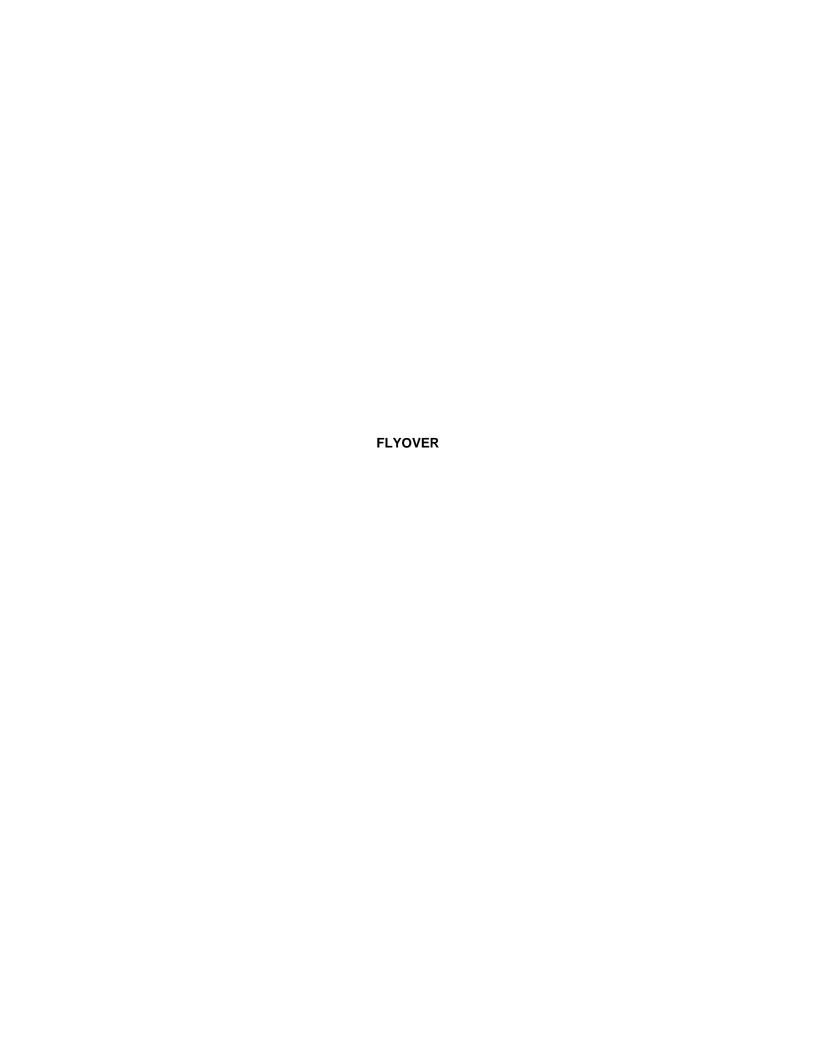
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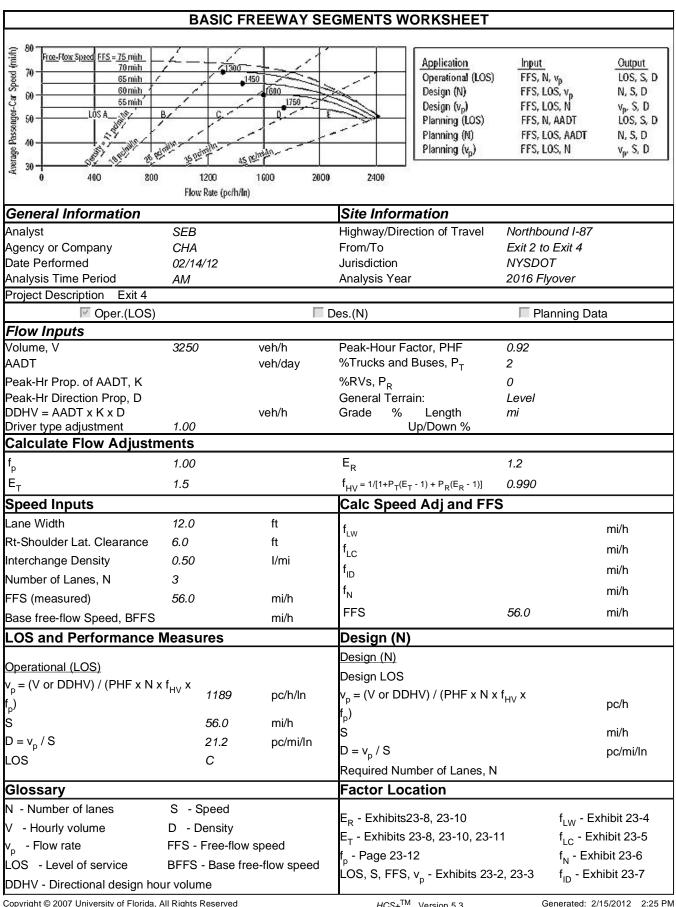
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|  | BASIC F  | REEWAY SE                                 | GMENTS W  | ORKSHEET   |  |   |
|--|--|---|---|--|--|---|
| Second   Speed   Spe | B C C  | 1450<br>(600<br>1750<br>0<br>1600<br>2000 | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, N<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>NADT LOS, S, D<br>S, AADT N, S, D            |
| General Information  | rion rate (ponini                                    | v.  | Site Inform   | nation   |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/15/12<br>PM                         |   |   | ection of Travel   | Southbou<br>Exit 5 to E<br>NYSDOT<br>2046 Dian                     | Exit 4  |
| Oper.(LOS)   |  |   | Des.(N)   |  | ☐ Plan   | ning Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D  | 3900   | veh/h<br>veh/day                          | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade % | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level  |   |
| Driver type adjustment   | 1.00   | veh/h                                     |   | Length<br>Up/Down %  | mi   |   |
| Calculate Flow Adjustr   | nents  |   |   | •  |  |   |
| $f_p$  | 1.00   |   | $E_R$   |  | 1.2  |   |
| E <sub>T</sub>   | 1.5  |   | $f_{HV} = 1/[1+P_T(E)]$   | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |   |
| Speed Inputs   |  |   | Calc Spee   | d Adj and FFS  | }  |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>3<br>56.0                     | ft<br>ft<br>I/mi<br>mi/h                  | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS              |  | 56.0   | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h  |
| Base free-flow Speed, BFFS   |  | mi/h                                      |   |  | 30.0   | 1111/11   |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ S $D = v_p / S$ LOS  |  | pc/h/ln<br>mi/h<br>pc/mi/ln               | $f_p$ )<br>S<br>D = $v_p / S$   | DHV) / (PHF x N x  | f <sub>HV</sub> x  | pc/h<br>mi/h<br>pc/mi/ln  |
|  |  |   | <u> </u>  | mber of Lanes, N   |  |   |
| Glossary  N - Number of lanes  V - Hourly volume  v <sub>p</sub> - Flow rate  LOS - Level of service  DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fr |   | f <sub>p</sub> - Page 23-   | 23-8, 23-10<br>23-8, 23-10, 23-1   |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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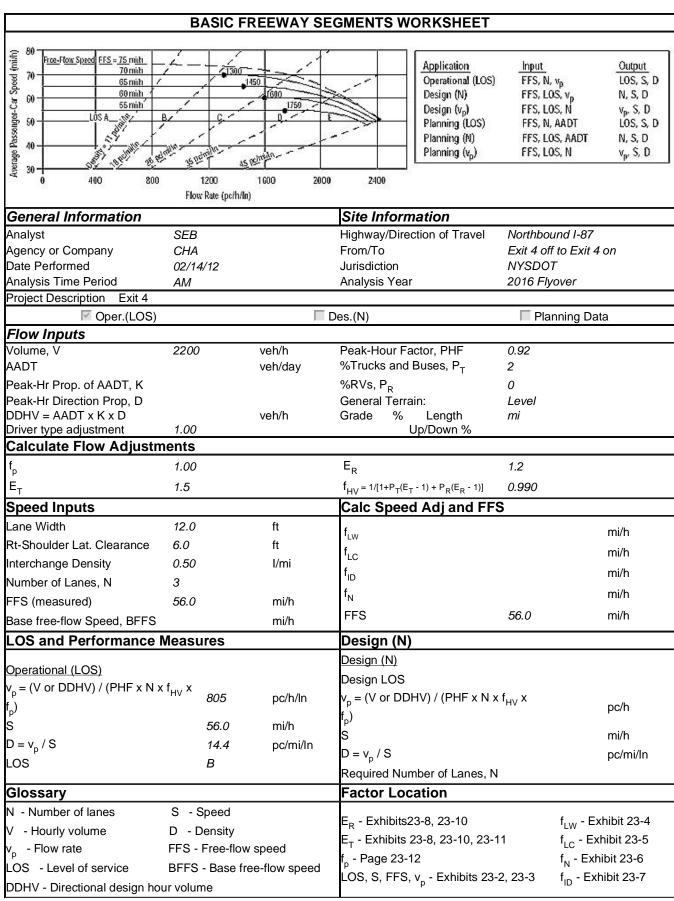
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|  | BASIC F             | REEWAY SE                                      | EGMENTS W   | ORKSHEET   |   |  |
|--|---------------------|--|---|--|---|--|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 65 mith 60 mith 65 mith 60 mith 65 mith 60 mith 65 mith 60 mith 65 mith 60 mith 65 mith 60 mi | B C C               | 150 (600 1750 1750 1750 1750 1750 1750 1750 17 | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v <sub>j</sub><br>FFS, LOS,<br>FFS, N, A<br>FFS, LOS,<br>FFS, LOS, | v <sub>p</sub> N, S, D<br>N v <sub>p</sub> , S, D<br>ADT LOS, S, D<br>AADT N, S, D |
| General Information  | Flow Rate (pc/h/lin | )  | Site Inforn   | nation   |   |  |
| Analyst  | SEB                 |  |   | ction of Travel  | Southbour   | nd I-87  |
| Agency or Company  | CHA                 |  | From/To   | olion of travel  | Exit 4 to E   |  |
| Date Performed   | 02/14/12            |  | Jurisdiction  |  | NYSDOT  |  |
| Analysis Time Period   | AM                  |  | Analysis Year   | r  | 2016 Flyo   | /er  |
| Project Description Exit 4   |                     |  |   |  |   |  |
| Oper.(LOS)   |                     |  | Des.(N)   |  | ☐ Planr   | ning Data  |
| Flow Inputs  | 5050                | la /la   | Peak-Hour Fa  | oston DUE  | 0.00  |  |
| Volume, V<br>AADT  | 5350                | veh/h<br>veh/day                               | %Trucks and   |  | 0.92<br>2   |  |
| Peak-Hr Prop. of AADT, K   |                     | verilday                                       | %RVs, P <sub>R</sub>                                  | D0000, 1 T   | 0   |  |
| Peak-Hr Direction Prop, D  |                     |  | General Terra   | ain·   | Level   |  |
| DDHV = AADT x K x D  |                     | veh/h  | Grade %   | Length   | mi  |  |
| Driver type adjustment   | 1.00                |  |   | Up/Down %  |   |  |
| Calculate Flow Adjustr   | nents               |  |   |  |   |  |
| $f_p$  | 1.00                |  | E <sub>R</sub>  |  | 1.2   |  |
| E <sub>T</sub>   | 1.5                 |  | f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>1</sub> | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990   |  |
| Speed Inputs   |                     |  | Calc Speed  | d Adj and FFS  | <b>3</b>  |  |
| Lane Width   | 12.0                | ft   | f   | -  |   | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0                 | ft   | f <sub>LW</sub>                                       |  |   |  |
| Interchange Density  | 0.50                | I/mi   | f <sub>LC</sub>                                       |  |   | mi/h   |
| Number of Lanes, N   | 3                   |  | $f_ID$  |  |   | mi/h   |
| FFS (measured)   | 56.0                | mi/h   | $f_N$   |  |   | mi/h   |
| Base free-flow Speed, BFFS   | 00.0                | mi/h   | FFS   |  | 56.0  | mi/h   |
| LOS and Performance  | Measures            | 1111/11  | Design (N)  | \  |   |  |
| Loo and r chormanec  | Measures            |  | Design (N)  |  |   |  |
| Operational (LOS)  |                     |  |   |  |   |  |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$  | x f <sub>HV</sub> x | n o/h /ln                                      | Design LOS  | U\/\   | f v   |  |
| f <sub>p</sub> )   | <sup>⊓v</sup> 1958  | pc/h/ln  | . "   | HV) / (PHF x N x   | 'HV *   | pc/h   |
| S  | 55.3                | mi/h   | f <sub>p</sub> )                                      |  |   | ! A  |
| $D = v_p / S$  | 35.4                | pc/mi/ln                                       | S<br>D :: / C   |  |   | mi/h   |
| LOS  | E                   |  | $D = v_p / S$   |  |   | pc/mi/ln   |
| 01   |                     |  |   | mber of Lanes, N   |   |  |
| Glossary   | 0 0 '               |  | Factor Loc  | ation  |   |  |
| N - Number of lanes  | S - Speed           |  | E <sub>R</sub> - Exhibits2                            | 23-8, 23-10  |   | f <sub>LW</sub> - Exhibit 23-4   |
| V - Hourly volume  | D - Density         |  | 1 2 2   | 23-8, 23-10, 23-1  |   | f <sub>LC</sub> - Exhibit 23-5   |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow     |  | f <sub>p</sub> - Page 23-1                            |  |   | f <sub>N</sub> - Exhibit 23-6  |
| LOS - Level of service   | BFFS - Base fr      | ee-flow speed                                  | F   | v <sub>p</sub> - Exhibits 23-2   |   | f <sub>ID</sub> - Exhibit 23-7   |
| DDHV - Directional design ho   | our volume          |  | ,   | ρ  | -   | טו   |
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|  | BASIC FI                                    | REEWAY SE                | <b>GMENTS W</b>  | ORKSHEET   |  |   |
|--|---|--------------------------|--|--|--|---|
| S0   Free-Flow Speed   FFS = 75 minh   70 minh   70 minh   65 minh   60 minh   55 minh   50   LOS A   10   10   10   10   10   10   10 | ar cr                                       | 150<br>(600<br>1750<br>0 |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS | , v <sub>p</sub> N, S, D<br>, N v <sub>p</sub> , S, D<br>ADT LOS, S, D<br>, AADT N, S, D          |
| 0 400 800  | 1200<br>Flow Rate (pc/h/ln)                 | 1600 2000                | 2400   |  |  |   |
| General Information  |   |                          | Site Inform  |  |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/14/12<br>AM                |                          | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea              | ction of Travel  | Northbour<br>Exit 4 off t<br>NYSDOT<br>2016 Flyo                   | to Exit 4 off   |
| ✓ Oper.(LOS)   |   |                          | Des.(N)  |  | ☐ Plan   | ning Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 2450  | veh/h<br>veh/day         | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level  |   |
| DDHV = AADT x K x D Driver type adjustment   | 1.00  | veh/h                    | Grade %  | Length<br>Up/Down %  | mi   |   |
| Calculate Flow Adjustm   | 1.00  |                          | E <sub>R</sub>   |  | 1.2  |   |
| f <sub>p</sub><br>E <sub>⊤</sub>   | 1.5   |                          |  | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990  |   |
| Speed Inputs   | 7.0   |                          |  | d Adj and FFS  |  |   |
| Lane Width   | 12.0  | ft                       |  | a Aaj ana 11 c   | <u> </u>   | • 4   |
| Rt-Shoulder Lat. Clearance   | 6.0   | ft                       | f <sub>LW</sub>  |  |  | mi/h  |
| Interchange Density  | 0.50  | I/mi                     | f <sub>LC</sub>  |  |  | mi/h  |
| Number of Lanes, N   | 3   |                          | $f_{ID}$   |  |  | mi/h  |
| FFS (measured)   | 56.0  | mi/h                     | f <sub>N</sub>   |  |  | mi/h  |
| Base free-flow Speed, BFFS   | 00.0  | mi/h                     | FFS  |  | 56.0   | mi/h  |
| LOS and Performance M  | /leasures                                   | ,                        | Design (N)   | )  |  |   |
| Operational (LOS) v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>p</sub> ) S   |   | pc/h/ln<br>mi/h          | <u>Design (N)</u><br>Design LOS                                      | )<br>HV) / (PHF x N x  | f <sub>HV</sub> x  | pc/h<br>mi/h  |
| $D = v_p / S$  | 16.0  | pc/mi/ln                 |  |  |  |   |
| LOS  | В   |                          | D = v <sub>p</sub> / S   | mber of Lanes, N   |  | pc/mi/ln  |
| Glossary   |   |                          | Factor Loc   |  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate   | S - Speed<br>D - Density<br>FFS - Free-flow | speed                    | E <sub>R</sub> - Exhibits2   | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1  | f <sub>LW</sub> - Exhibit 23-4<br>f <sub>LC</sub> - Exhibit 23-5<br>f <sub>N</sub> - Exhibit 23-6 |
| LOS - Level of service DDHV - Directional design hou   | BFFS - Base fre<br>ur volume                | ee-flow speed            | ۲  | , v <sub>p</sub> - Exhibits 23-2   |  | f <sub>ID</sub> - Exhibit 23-7  |

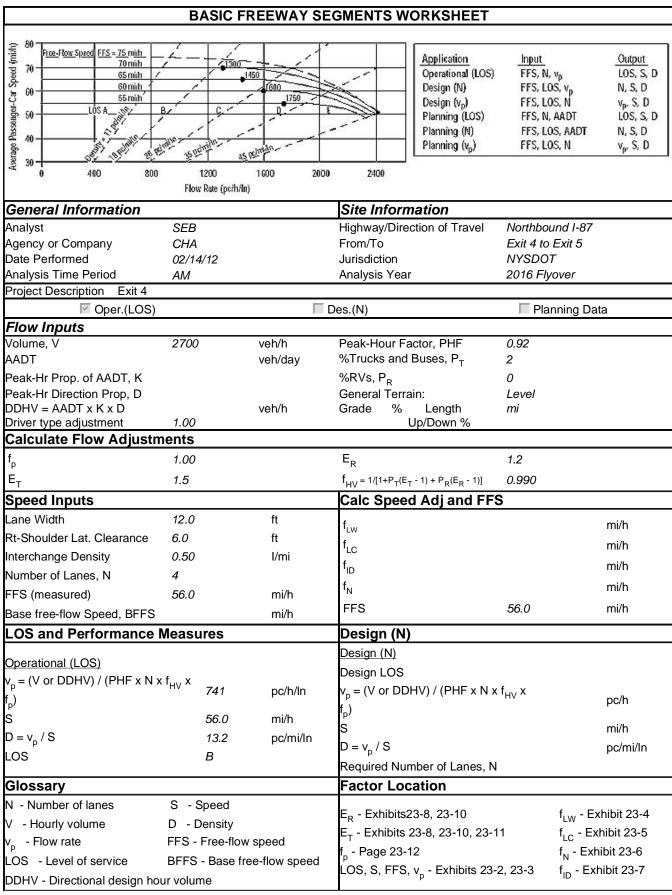
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|  | BASIC FF  | REEWAY SE  | GMENTS W   | ORKSHEET   |   |   |
|--|---|--|--|--|---|---|
| Wassenger  | B C C   | 150 (600 1750 1750 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, vp FFS, LOS, FFS, N, AA FFS, LOS, FFS, LOS, | v <sub>p</sub> N, S, D<br>N v <sub>p</sub> , S, D<br>NDT LOS, S, D<br>AADT N, S, D  |
| General Information  | Flow Rate (pc/h/ln)   |  | Site Inform  | nation   |   |   |
| Analyst<br>Agency or Company<br>Date Performed   | SEB<br>CHA<br>02/14/12  |  | Highway/Dire<br>From/To<br>Jurisdiction                              | ection of Travel   | Southboun<br>Exit 4 off to<br>NYSDOT                      | Exit 4 on   |
| Analysis Time Period Project Description Exit 4  | AM  |  | Analysis Yea   | r  | 2016 Flyov  | rer   |
| ✓ Oper.(LOS)   |   | П  | Des.(N)  |  | ☐ Plann   | ing Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 4750  | veh/h<br>veh/day   | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level                                   |   |
| DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjustm  | 1.00  | veh/h  | Grade %  | Length<br>Up/Down %  | mi  |   |
| f <sub>p</sub>   | 1.00  |  | E <sub>R</sub>   |  | 1.2   |   |
| E <sub>T</sub>   | 1.5   |  | • •  | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990   |   |
| Speed Inputs   |   |  |  | d Adj and FFS  | 5   |   |
| Lane Width Rt-Shoulder Lat. Clearance  | 12.0<br>6.0   | ft<br>ft   | f <sub>LW</sub>  |  |   | mi/h<br>mi/h  |
| Interchange Density<br>Number of Lanes, N  | 0.50<br>3   | I/mi   | $f_{ID}$   |  |   | mi/h  |
| FFS (measured)   | 56.0  | mi/h   | f <sub>N</sub><br>FFS  |  | 56.0  | mi/h<br>mi/h  |
| Base free-flow Speed, BFFS LOS and Performance I   | Mossuros  | mi/h   |  | \  |   |   |
| Operational (LOS)  v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>p</sub> )  |   | pc/h/ln  | . "  | )<br>)HV) / (PHF x N x   | f <sub>HV</sub> x   | pc/h  |
| S<br>D = v <sub>p</sub> / S<br>LOS   | 56.0<br>31.0<br>D   | mi/h<br>pc/mi/ln   | f <sub>p</sub> )<br>S<br>D = v <sub>p</sub> / S<br>Required Nu       | mber of Lanes, N   |   | mi/h<br>pc/mi/ln  |
| Glossary   |   |  | Factor Loc   | cation   |   |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho | S - Speed<br>D - Density<br>FFS - Free-flow<br>BFFS - Base fre<br>ur volume |  | f <sub>p</sub> - Page 23-  | 23-8, 23-10, 23-1  | 1 f<br>f  | <sub>LW</sub> - Exhibit 23-4<br><sub>LC</sub> - Exhibit 23-5<br><sub>N</sub> - Exhibit 23-6<br><sub>ID</sub> - Exhibit 23-7 |

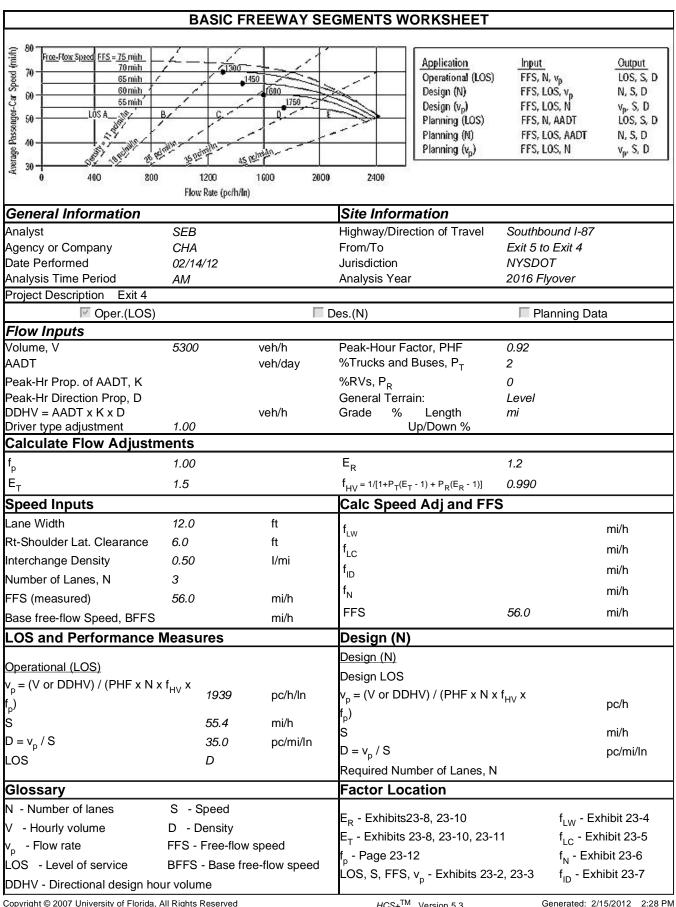
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|  | BASIC F   | REEWAY SE                | GMENTS W  | ORKSHEET   |  |  |
|--|---|--------------------------|---|--|--|--|
| Free-Flow Spzed FFS = 75 mith   70 | B C C   | 150 (600) 1750 E         | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AAI FFS, LOS, N |  |
| General Information  | Flow Rate (pc/h/lin)                                  |                          | Site Inform   | nation   |  |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | CLD<br>CHA<br>07/30/13<br>AM                          |                          |   | ection of Travel   | Northbound I-<br>Exit 5 to Exit (<br>NYSDOT<br>2016 Flyover  |  |
| ✓ Oper.(LOS)   |   |                          | Des.(N)   |  | ☐ Planning   | Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 2550  | veh/h<br>veh/day         | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terr                 | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level  |  |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00  | veh/h                    | Grade %   | Length<br>Up/Down %  | mi   |  |
| Calculate Flow Adjustr   | 1.00  |                          |   |  | 1.2  |  |
| f <sub>p</sub><br> Ε <sub>Τ</sub>  | 1.50  |                          | E <sub>R</sub>  | 1)   | 0.990  |  |
| Speed Inputs   | 1.5   |                          |   | d Adj and FFS  |  |  |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>4<br>56.0                      | ft<br>ft<br>I/mi<br>mi/h | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub>                      | <del>a najana i re</del>   |  | mi/h<br>mi/h<br>mi/h<br>mi/h                                     |
| Base free-flow Speed, BFFS   |   | mi/h                     | FFS   |  | 56.0   | mi/h   |
| LOS and Performance  |   | -                        | Design (N   | )  |  |  |
| Operational (LOS)  v <sub>p</sub> = (V or DDHV) / (PHF x N :   |   | pc/h/ln                  | $\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DD})$             | )HV) / (PHF x N x  | f <sub>HV</sub> x  | pc/h   |
| S<br>D = v <sub>p</sub> / S<br>LOS   | 56.0<br>12.5<br>B                                     | mi/h<br>pc/mi/ln         | f <sub>p</sub> ) S D = v <sub>p</sub> / S Required Nu                               | mber of Lanes, N   |  | mi/h<br>pc/mi/ln   |
| Glossary   |   |                          | Factor Loc  |  |  |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fre | •                        | E <sub>R</sub> - Exhibits<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1 f <sub>LC</sub>  | - Exhibit 23-4<br>- Exhibit 23-5<br>Exhibit 23-6<br>Exhibit 23-7 |
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|  | BASIC F   | REEWAY SE                | EGMENTS W   | VORKSHEET  |  |   |
|--|---|--------------------------|---|--|--|---|
| Second   S | By C.   | 150<br>(600<br>1750<br>0 |   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AAD FFS, LOS, N | Output  LOS, S, D  N, S, D  v <sub>p</sub> , S, D  LOS, S, D  T  N, S, D  v <sub>p</sub> , S, D |
| 0 400 800  | ) 1200<br>Flow Rate (pc/h/lin                         | 1600 200<br>)            | 0 2400  |  |  |   |
| General Information  |   |                          | Site Infori   | mation   |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | CLD<br>CHA<br>07/30/13<br>AM                          |                          | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea                             | ection of Travel   | Southbound I-<br>Exit 6 to Exit 5<br>NYSDOT<br>2016 Flyover  | 87  |
| ✓ Oper.(LOS)   |   |                          | Des.(N)   |  | ☐ Planning   | Data  |
| Flow Inputs  |   |                          | ( )   |  |  |   |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K  | 6000  | veh/h<br>veh/day         | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub>                                  | d Buses, P <sub>T</sub>  | 0.92<br>2<br>0   |   |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjustr  | 1.00  | veh/h                    | General Terr<br>Grade %   | rain:<br>Length<br>Up/Down %   | Level<br>mi  |   |
|  |   |                          | Е   |  | 1.0  |   |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.00<br>1.5   |                          | E <sub>R</sub>  | = 1)   | 1.2<br>0.990   |   |
| Speed Inputs   | 1.5   |                          |   | $[E_T - 1) + P_R(E_R - 1)]$<br>ed Adj and FFS  |  |   |
| Lane Width   | 12.0  | ft                       |   | eu Auj anu FF3   |  |   |
| Rt-Shoulder Lat. Clearance   | 6.0   | ft                       | $f_{LW}$  |  |  | mi/h  |
| Interchange Density  | 0.50  | I/mi                     | $f_{LC}$  |  |  | mi/h  |
| Number of Lanes, N   | 4   | 71111                    | $f_{ID}$  |  |  | mi/h  |
| FFS (measured)   | 56.0  | mi/h                     | $f_N$   |  |  | mi/h  |
| Base free-flow Speed, BFFS   | 30.0  | mi/h                     | FFS   |  | 56.0   | mi/h  |
| LOS and Performance  | Measures  | 1111/11                  | Design (N   | 1  |  |   |
| Operational (LOS)<br>$V_p = (V \text{ or DDHV}) / (PHF \times N)$<br>$f_p$   |   | pc/h/ln                  | Design (N) Design LOS v <sub>p</sub> = (V or DE                                     |  | f <sub>HV</sub> x  | pc/h  |
| S<br>D = v <sub>p</sub> / S<br>LOS   | 56.0<br>29.4<br>D                                     | mi/h<br>pc/mi/ln         | f <sub>p</sub> ) S D = v <sub>p</sub> / S Required No                               | ımber of Lanes, N  |  | mi/h<br>pc/mi/ln  |
| Glossary   |   |                          | Factor Lo   |  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fro |                          | E <sub>R</sub> - Exhibits<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | s23-8, 23-10<br>s 23-8, 23-10, 23-1  | 1 f <sub>LC</sub> - f <sub>N</sub> - I   | Exhibit 23-4 Exhibit 23-5 Exhibit 23-6 Exhibit 23-7   |
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| • • •  |                              | MPS AND                       | ANII JUI            |                                      |   | <u> </u>               |                                      |                                 |                                      |  |  |  |
|--|------------------------------|-------------------------------|---------------------|--------------------------------------|---|------------------------|--------------------------------------|---------------------------------|--------------------------------------|--|--|--|
| General Infor  | mation                       |                               |                     | Site Infor                           |   |                        |                                      |                                 |                                      |  |  |  |
| Analyst  | SEB                          |                               |                     | reeway/Dir of Tr                     |   |                        |                                      |                                 |                                      |  |  |  |
| Agency or Company  |                              |                               |                     | unction                              | Exit 2W On-Ramp   |                        |                                      |                                 |                                      |  |  |  |
| Date Performed   | 02/14                        | 4/12                          |                     | urisdiction                          |   | NYSDOT                 |                                      |                                 |                                      |  |  |  |
| Analysis Time Period<br>Project Description                      |                              |                               | A                   | nalysis Year                         |   | 2016 Flyover           |                                      |                                 |                                      |  |  |  |
|  | EXIL 4                       |                               |                     |                                      |   |                        |                                      |                                 |                                      |  |  |  |
| Inputs   |                              | Terrain: Level                |                     |                                      |   |                        |                                      | Ь.                              | Α Ι'                                 |  |  |  |
| Jpstream Adj Ramp  |                              | Terrain. Lever                |                     |                                      |   |                        |                                      | Downstre<br>Ramp                | eam Adj                              |  |  |  |
| ✓ Yes   ☐ On   | 1                            |                               |                     |                                      |   |                        |                                      | 1 '                             | E 0                                  |  |  |  |
|  | _                            |                               |                     |                                      |   |                        |                                      | ☐ Yes                           | ☐ On                                 |  |  |  |
| □ No □ Off   | İ                            |                               |                     |                                      |   |                        |                                      | ✓ No                            | Off                                  |  |  |  |
| - <sub>up</sub> = 1100   | ft                           |                               |                     |                                      |   |                        | L <sub>down</sub> =                  | ft                              |                                      |  |  |  |
| S <sub>FF</sub> = 56.0 mph                                       |                              |                               |                     |                                      |   | 0.0 mph                |                                      | 1                               |                                      |  |  |  |
| $v_{u} = 660 \text{ v}$  | show lanes, L <sub>A</sub> , |                               | •                   |                                      | $V_D =$   | veh/h                  |                                      |                                 |                                      |  |  |  |
| Conversion to  | o pc/h Uni                   | der Base C                    |                     |                                      | D. K. I.  |                        |                                      |                                 |                                      |  |  |  |
| Conversion to pc/h Under Base Conditions  (pc/h) V PHF Terrain % |                              |                               |                     |                                      | %Rv   | f                      | f                                    | V – V/PH                        | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |  |
|  | (Veh/hr)                     | FHF                           | renalli             | %Truck                               | /0KV  | f <sub>HV</sub>        | f <sub>p</sub>                       | V - V/F'                        | ' ^ 'HV ^ 'p                         |  |  |  |
| Freeway  | 2850                         | 0.92                          | Level               | 2                                    | 0   | 0.990                  | 1.00                                 |                                 | 3129                                 |  |  |  |
| Ramp   | 390                          | 0.92                          | Level               | 2                                    | 0   | 0.990                  | 1.00                                 |                                 | 428                                  |  |  |  |
| JpStream   | 660                          | 0.92                          | Level               | 2                                    | 0   | 0.990                  | 1.00                                 |                                 | 725                                  |  |  |  |
| DownStream   |                              | <u> </u>                      |                     |                                      |   |                        | <u> </u>                             |                                 |                                      |  |  |  |
|  |                              | Merge Areas                   |                     |                                      | Diverge Areas <b>Estimation of v</b> <sub>12</sub>  |                        |                                      |                                 |                                      |  |  |  |
| Estimation of  | 12                           |                               |                     |                                      | Estimati  | ion of v <sub>12</sub> |                                      |                                 |                                      |  |  |  |
|  | $V_{12} = V_{F}$             | (P <sub>FM</sub> )            |                     |                                      |   | V40                    | = V <sub>R</sub> + (V <sub>F</sub> - | V <sub>D</sub> )P <sub>CD</sub> |                                      |  |  |  |
| -EQ =  | 828.40                       | (Equation 2                   | 5-2 or 25-3)        |                                      | L <sub>EQ</sub> = (Equation 25-8 or 25-9)   |                        |                                      |                                 |                                      |  |  |  |
| P <sub>FM</sub> =  | 0.601                        | using Equation                | on (Exhibit 25-5    | )                                    |   |                        |                                      |                                 |                                      |  |  |  |
| ' <sub>12</sub> =  | 1881                         |                               | •                   | ,                                    | $P_{FD}$ = using Equation (Exhibit 25-12)<br>$V_{12}$ = pc/h                                      |                        |                                      |                                 |                                      |  |  |  |
|  |                              | pc/h (Equatio                 | n 25-4 or 25-       |                                      |   |                        |                                      |                                 |                                      |  |  |  |
| 7 <sub>3</sub> or V <sub>av34</sub>                              | 5)                           | F 5/11 (= 40.0                |                     |                                      | $V_3$ or $V_{av34}$ pc/h (Equation 25-15 or 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No |                        |                                      |                                 |                                      |  |  |  |
| Is $V_3$ or $V_{av34} > 2,70$                                    | 0 pc/h?                      | s 🗹 No                        |                     |                                      |   |                        |                                      |                                 |                                      |  |  |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5 *                    | V <sub>12</sub> /2           | s 🗹 No                        |                     |                                      | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No  |                        |                                      |                                 |                                      |  |  |  |
| Yes,V <sub>12a</sub> =   | pc/h                         | (Equation 25-                 | 8)                  |                                      | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)   |                        |                                      |                                 |                                      |  |  |  |
| Capacity Che   | •                            | · ·                           | ,                   |                                      | Capacit   | y Checks               |                                      |                                 |                                      |  |  |  |
| o quality care   | Actual                       | Ca                            | pacity              | LOS F?                               | 1000  | Actual                 |                                      | Capacity                        | LOS F                                |  |  |  |
|  |                              |                               | ,                   |                                      | V <sub>F</sub>  | 1.3.0                  | Exhibit 2                            |                                 |                                      |  |  |  |
| V  | 3557                         | Exhibit 25-7                  |                     | No                                   | $V_{FO} = V_{F}$  | - \/                   | Exhibit 2                            |                                 | _                                    |  |  |  |
| $V_{FO}$   | 3007                         | EXHIBIT 25-7                  |                     | INO                                  |   | - VR                   |                                      |                                 | _                                    |  |  |  |
|  |                              |                               |                     |                                      | V <sub>R</sub>  |                        | Exhibit 2                            |                                 |                                      |  |  |  |
| Flow Entering  |                              |                               |                     | T                                    | Flow Entering Diverge Influence Area  |                        |                                      |                                 |                                      |  |  |  |
| <del></del>  | Actual                       |                               | esirable            | Violation?                           |   | Actual                 |                                      | esirable                        | Violation?                           |  |  |  |
| V <sub>R12</sub>   | 2309                         | Exhibit 25-7                  | 4600:All            | No                                   | V <sub>12</sub>   |                        | Exhibit 25-14                        |                                 |                                      |  |  |  |
| evel of Serv   | ice Detern                   | nination (it                  | not F)              |                                      | Level of  | Service L              | Determina                            | tion (if n                      | ot F)                                |  |  |  |
| $D_R = 5.475 +$  | 0.00734 v <sub>R</sub> + 0   | 0.0078 V <sub>12</sub> - 0.00 | )627 L <sub>A</sub> |                                      |   | $D_R = 4.252 +$        | 0.0086 V <sub>12</sub>               | - 0.009 L <sub>D</sub>          |                                      |  |  |  |
| $P_{R} = 18.0 \text{ (pc)}$                                      | /mi/ln)                      |                               |                     |                                      | $D_R = (p$  | c/mi/ln)               |                                      |                                 |                                      |  |  |  |
| .OS = B (Exhib   | oit 25-4)                    |                               |                     |                                      | LOS = (Exhibit 25-4)  |                        |                                      |                                 |                                      |  |  |  |
| Speed Detern   | •                            |                               |                     |                                      | ,   | Determina              | tion                                 |                                 |                                      |  |  |  |
| •  |                              |                               |                     |                                      | <del>                                     </del>  | xhibit 25-19)          |                                      |                                 |                                      |  |  |  |
| 3  |                              |                               |                     |                                      |   | ph (Exhibit 25-1       | 0)                                   |                                 |                                      |  |  |  |
| .,   | (Exhibit 25-19)              |                               |                     |                                      |   |                        |                                      |                                 |                                      |  |  |  |
|  | (Exhibit 25-19)              |                               |                     | S <sub>0</sub> = mph (Exhibit 25-19) |   |                        |                                      |                                 |                                      |  |  |  |
|  | (Exhibit 25-14)              |                               |                     |                                      | S = mph (Exhibit 25-15)   |                        |                                      |                                 |                                      |  |  |  |

|   | 4.                             | INAIVIE       | S AND RAM                |                            |   | 11110   | ···                |  |                   |                                    |  |  |  |
|---|--------------------------------|---------------|--------------------------|----------------------------|---|---|--------------------|--|-------------------|------------------------------------|--|--|--|
| General Info  |                                |               |                          | Site Infor                 |   |   |                    |  |                   |                                    |  |  |  |
| Date Performed  | Agency or Company CHA Junction |               |                          |                            |   | Exit 4 NB Off to ASR<br>NYSDOT  |                    |  |                   |                                    |  |  |  |
| Project Description   |                                |               | A                        | naiysis Year               |   | 2016 F  | lyover             |  |                   |                                    |  |  |  |
| Inputs  | I EXIL 4                       |               |                          |                            |   |   |                    |  |                   |                                    |  |  |  |
| •   |                                | Terrain: Leve | <u> </u>                 |                            |   |   |                    |  | Downstras         | m Adi                              |  |  |  |
| Upstream Adj Ran  | •                              |               | •                        |                            |   |   |                    |  | Downstrea<br>Ramp |                                    |  |  |  |
|   |                                |               |                          |                            |   |   |                    |  | ✓ Yes             | ☐ On                               |  |  |  |
| M No □  | Off                            |               |                          |                            |   |   |                    |  | □ No              | ✓ Off                              |  |  |  |
| $L_{up} = ft$   |                                | S             | <sub>FF</sub> = 56.0 mph |                            | S <sub>FR</sub> = 4   | 10.0 mj   | <br>oh             |  | down              | 2600 ft                            |  |  |  |
| V <sub>u</sub> = veh  | n/h                            |               | • •                      | show lanes, L <sub>A</sub> |   |   |                    |  | V <sub>D</sub> =  | 190 veh/l                          |  |  |  |
| Conversion  | to pc/h Un                     | der Base (    | Conditions               |                            |   |   |                    |  | ,                 |                                    |  |  |  |
| (pc/h)  | (pc/h) V PHF Terrain %Truck    |               |                          |                            | %Rv   |   | ${\rm f}_{\rm HV}$ | f <sub>p</sub>                         | v = V/PHF         | x f <sub>HV</sub> x f <sub>p</sub> |  |  |  |
| Freeway   | 3250                           | 0.92          | Level                    | 2                          | 0   | 0   | .990               | 1.00                                   | 356               | 58                                 |  |  |  |
| Ramp  | 800                            | 0.82          | Level                    | 2                          | 0   | 0   | .990               | 1.00                                   | 98                | 5                                  |  |  |  |
| UpStream<br>DownStream  | 190                            | 0.82          | Level                    | 2                          | 0   | +   | .990               | 1.00                                   | 23                | 1                                  |  |  |  |
| Downstream  |                                | Merge Areas   | Levei                    |                            | 0   |   |                    | Diverge Areas                          |                   | 4                                  |  |  |  |
| Estimation  |                                |               |                          |                            | Estimation of v <sub>12</sub>                                   |   |                    |  |                   |                                    |  |  |  |
|   |                                | (P)           |                          |                            | 1   |   |                    | = V <sub>R</sub> + (V <sub>F</sub> - V | _ \P              |                                    |  |  |  |
| $V_{12} = V_F (P_{FM})$<br>$L_{FO} =$ (Equation 25-2 or 25-3) |                                |               |                          |                            |   |   |                    | 48.23 (Equation                        |                   | 5-9)                               |  |  |  |
| L <sub>EQ</sub> =<br>P <sub>FM</sub> =                        |                                | Equation (E   |                          |                            | L <sub>EQ</sub> =<br>P <sub>FD</sub> =                          |   |                    | .625 using Ed                          |                   |                                    |  |  |  |
| V <sub>12</sub> =   | pc/h                           | _900.0 (2     |                          |                            | V <sub>12</sub> =   |   |                    | 601 pc/h                               | quation (EXII     | DI 25 12)                          |  |  |  |
| V <sub>3</sub> or V <sub>av34</sub>                           | •                              | (Equation 25  | -4 or 25-5)              |                            | $V_3$ or $V_{av34}$ 967 pc/h (Equation 25-15 or 25-16)          |   |                    |  |                   |                                    |  |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2                    |                                |               | ,                        |                            | Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |   |                    |  |                   |                                    |  |  |  |
| Is $V_3$ or $V_{av34} > 1$                                    |                                |               |                          |                            |   |   |                    | Yes ✓ No                               |                   |                                    |  |  |  |
| If Yes,V <sub>12a</sub> =                                     | :=                             | (Equation 25  | i-8)                     |                            | If Yes, $V_{12a}$ = pc/h (Equation 25-18)                       |   |                    |  |                   |                                    |  |  |  |
| Capacity Cl   |                                | (= 4          | -/                       |                            | Capacit   |   |                    | (= 4*******                            |                   |                                    |  |  |  |
|   | Actual                         | С             | apacity                  | LOS F?                     | Journal   | ,   | Actual             | Ca                                     | pacity            | LOS F                              |  |  |  |
|   |                                |               | - 1                      |                            | V <sub>F</sub>  |   | 3568               | Exhibit 25-1                           |                   | No                                 |  |  |  |
| $V_{FO}$  |                                | Exhibit 25-7  |                          |                            | $V_{FO} = V_{F}$  | - V <sub>D</sub>  | 2583               | Exhibit 25-1                           | +                 | No                                 |  |  |  |
| FO  |                                | ZALIBAT ZO    |                          |                            | V <sub>R</sub>  | K   | 985                | Exhibit 25-3                           |                   | No                                 |  |  |  |
| Elow Entori   | na Maraa Ir                    | ofluonos A    | <b>*</b> 00              |                            |   |   |                    |  |                   |                                    |  |  |  |
| Flow Enteri   | Actual                         | 1             | <b>rea</b><br>Desirable  | Violation?                 | Flow Entering Diverge Influence Area  Actual Max Desirable      |   |                    |  |                   | Violation                          |  |  |  |
| V <sub>R12</sub>  | , iotaai                       | Exhibit 25-7  | _ 30 40.10               |                            | V <sub>12</sub>   | 2601  |                    | Exhibit 25-14                          | 4400:All          | No                                 |  |  |  |
| Level of Se   | rvice Deteri                   |               | if not F)                | 1                          |   |   |                    | eterminatio                            |                   |                                    |  |  |  |
|   | 0.00734 v <sub>R</sub> +       | •             |                          |                            |   |   |                    |  |                   | /                                  |  |  |  |
| $D_{R} = (pc/mi/ln)$  |                                |               |                          |                            |   | $D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ $D_R = 20.3 \text{ (pc/mi/ln)}$ |                    |  |                   |                                    |  |  |  |
| LOS = (Exhibit 25-4)  |                                |               |                          |                            |   | LOS = C (Exhibit 25-4)  |                    |  |                   |                                    |  |  |  |
| Speed Dete  |                                |               |                          |                            | Speed D   | •   |                    | on                                     |                   |                                    |  |  |  |
|   | 25-19)                         |               |                          |                            |   |   | xhibit 25          |  |                   |                                    |  |  |  |
| · ·   | xhibit 25-19)                  |               |                          |                            |   |   | h (Exhibit         | ,                                      |                   |                                    |  |  |  |
|   | xhibit 25-19)                  |               |                          |                            | 1   | -   | `<br>h (Exhibit    |  |                   |                                    |  |  |  |
|   | xhibit 25-14)                  |               |                          |                            | 1.  | -   | h (Exhibit         |  |                   |                                    |  |  |  |
| · (-  |                                |               |                          | ام                         | ,   | ,   |                    |  |                   |                                    |  |  |  |

|  |   | RAMP                     | S AND RAI                | MP JUNCTI                    | ONS WO  | RKS  | HEET  |                            |                     |                                    |  |  |  |  |
|--|---|--------------------------|--------------------------|------------------------------|---|--|---|----------------------------|---------------------|------------------------------------|--|--|--|--|
| General Infor  | mation  |                          |                          | Site Infor                   |   |  |   |                            |                     |                                    |  |  |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioc | reeway/Dir of Tr<br>Junction<br>Jurisdiction<br>Analysis Year |                          |                          |                              |   |  |   |                            |                     |                                    |  |  |  |  |
| Project Description  | Exit 4  |                          |                          |                              |   |  |   |                            |                     |                                    |  |  |  |  |
| Inputs   |   | Terrain: Leve            | 1                        |                              |   |  |   | 1                          | Б                   | A 1:                               |  |  |  |  |
| Upstream Adj Ramp  |   | Torium. Love             |                          |                              |   |  |   |                            | Downstrea<br>Ramp   | m Aaj                              |  |  |  |  |
| ✓ Yes ☐ Or   | Ì   |                          |                          |                              |   |  |   |                            | □ Yes               | □ On                               |  |  |  |  |
| □ No    Of   | f   |                          |                          |                              |   |  |   |                            | ✓ No                | Off                                |  |  |  |  |
| 2/00   | •   |                          |                          |                              |   |  |   |                            |                     | ft                                 |  |  |  |  |
| L <sub>up</sub> = 2600   | ft  | S                        | <sub>FF</sub> = 56.0 mph |                              | S <sub>FR</sub> = 40  | 0 0 mr   | h   |                            | L <sub>down</sub> = | п                                  |  |  |  |  |
| $V_u = 800 \text{ Ve}$   | eh/h  |                          | • •                      | ( show lanes, L <sub>A</sub> |   | 0.0p   |   |                            | V <sub>D</sub> =    | veh/h                              |  |  |  |  |
| Conversion to  | o pc/h Und  | der Base (               |                          |                              | DKI   |  |   |                            |                     |                                    |  |  |  |  |
| (nc/h) V PHF Terrain %Trucl  |   |                          |                          |                              | %Rv   |  | f <sub>HV</sub>   | f <sub>p</sub>             | v = V/PHF           | x f <sub>uv</sub> x f <sub>a</sub> |  |  |  |  |
| Freeway  | (Veh/hr)<br>2450  | 0.92                     | Level                    | 2                            | 0   | -  | .990  | 1.00                       | 26                  |                                    |  |  |  |  |
| Ramp   | 190   | 0.72                     | Level                    | 2                            | 0   | +  | 990   | 1.00                       | 23                  |                                    |  |  |  |  |
| UpStream   | 800   | 0.82                     | Level                    | 2                            | 0   | 0.   | 990   | 1.00                       | 98                  | 35                                 |  |  |  |  |
| DownStream   |   |                          |                          |                              |   |  |   |                            |                     |                                    |  |  |  |  |
| Merge Areas <b>Estimation of v</b> <sub>12</sub>                       |   |                          |                          |                              |   | Diverge Areas <b>Estimation of V</b> <sub>12</sub> |   |                            |                     |                                    |  |  |  |  |
| ESUMATION OF   |   | <i>-</i> .               |                          |                              | Estimati  | OII C  |   |                            |                     |                                    |  |  |  |  |
| [  | $V_{12} = V_F$  | 1 101                    | )                        |                              | $V_{12} = V_R + (V_F - V_R)P_{FD}$  |  |   |                            |                     |                                    |  |  |  |  |
| L <sub>EQ</sub> =  |   | ation 25-2 or            |                          |                              | L <sub>EQ</sub> = (Equation 25-8 or 25-9)   |  |   |                            |                     |                                    |  |  |  |  |
| P <sub>FM</sub> =  | _   | Equation (E              | xhibit 25-5)             |                              | $P_{FD}$ = 0.682 using Equation (Exhibit 25-12)   |  |   |                            |                     |                                    |  |  |  |  |
| V <sub>12</sub> =<br>V <sub>3</sub> or V <sub>av34</sub>               | pc/h  | /Equation 25             | 4 or 25 5)               |                              | $V_{12}$ = 1909 pc/h<br>$V_3$ or $V_{av34}$ 781 pc/h (Equation 25-15 or 25-16)  |  |   |                            |                     |                                    |  |  |  |  |
| Is $V_3$ or $V_{av34}$   |   | (Equation 25             | -4 01 25-5)              |                              | $V_3$ or $V_{av34}$ 781 pc/h (Equation 25-15 or 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |  |   |                            |                     |                                    |  |  |  |  |
| Is $V_3$ or $V_{av34} > 2,70$  |   |                          |                          |                              | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No  |  |   |                            |                     |                                    |  |  |  |  |
| If Yes,V <sub>12a</sub> =  | · <del>-</del>  | (Equation 25             | -8)                      |                              | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)   |  |   |                            |                     |                                    |  |  |  |  |
| Capacity Che   |   | ( 1                      | - /                      |                              | Capacity  |  |   | (                          | ,                   |                                    |  |  |  |  |
|  | Actual  | C                        | apacity                  | LOS F?                       |   | Actual   |   | l Capacity                 |                     | LOS F?                             |  |  |  |  |
|  |   |                          |                          |                              | $V_{F}$   |  | 2690  | Exhibit 25-1               | 4 6780              | No                                 |  |  |  |  |
| $V_{FO}$   |   | Exhibit 25-7             |                          |                              | $V_{FO} = V_{F}$  | - V <sub>R</sub>                                   | 2456  | Exhibit 25-1               | 4 6780              | No                                 |  |  |  |  |
|  |   |                          |                          |                              | V <sub>R</sub>  |  | 234   | Exhibit 25-3               | 2100                | No                                 |  |  |  |  |
| Flow Entering  | g Merge In  | fluence A                | rea                      | *                            | Flow Entering Diverge Influence Area  |  |   |                            |                     |                                    |  |  |  |  |
|  | Actual  |                          | Desirable                | Violation?                   |   | _  | Actual  | Max Desirab                |                     | Violation?                         |  |  |  |  |
| V <sub>R12</sub>   |   | Exhibit 25-7             |                          |                              | V <sub>12</sub>   |  | 1909  | Exhibit 25-14              | 4400:All            | No                                 |  |  |  |  |
| Level of Serv  |   |                          |                          |                              |   |  |   | eterminatio                |                     | F)                                 |  |  |  |  |
| $D_R = 5.475 + 0.$   | ••  | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |                              |   |  |   | .0086 V <sub>12</sub> - 0. | 009 L <sub>D</sub>  |                                    |  |  |  |  |
| D <sub>R</sub> = (pc/mi/ln)  |   |                          |                          |                              |   | $D_{R} = 17.5 \text{ (pc/mi/ln)}$                  |   |                            |                     |                                    |  |  |  |  |
| LOS = (Exhibit 25-4)   |   |                          |                          |                              |   | LOS = B (Exhibit 25-4)                             |   |                            |                     |                                    |  |  |  |  |
| Speed Determination  |   |                          |                          |                              |   | Speed Determination                                |   |                            |                     |                                    |  |  |  |  |
| M <sub>S</sub> = (Exibit 2   |   |                          |                          |                              | L °   | •  | xhibit 25<br>ı (Exhibit   | *                          |                     |                                    |  |  |  |  |
| S <sub>R</sub> = mph (Exhibit 25-19)                                   |   |                          |                          |                              |   | •  | ,   | ,                          |                     |                                    |  |  |  |  |
|  |   |                          |                          |                              |   |  | S <sub>0</sub> = 61.4 mph (Exhibit 25-19)<br>S = 53.3 mph (Exhibit 25-15) |                            |                     |                                    |  |  |  |  |
| S <sub>0</sub> = mph (Exh  | ibit 25-19)<br>ibit 25-14)                                    |                          |                          |                              |   |  |   |                            |                     |                                    |  |  |  |  |

| 1   |   | RAMP  | S AND RAM                | IP JUNCTI                    | ONS WOL   | RKS                             | HEET                                      |   |                     |                                    |  |  |  |  |
|---|---|---|--------------------------|------------------------------|---|---------------------------------|---|---|---------------------|------------------------------------|--|--|--|--|
| General Info  | rmation   |   |                          | Site Infor                   |   |                                 |   |   |                     |                                    |  |  |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | reeway/Dir of Tr<br>lunction<br>lurisdiction<br>Analysis Year |   |                          |                              |   |                                 |   |   |                     |                                    |  |  |  |  |
| Project Description   | Exit 4  |   |                          |                              |   |                                 |   |   |                     |                                    |  |  |  |  |
| Inputs  |   | Terrain: Leve   | I                        |                              |   |                                 |   | 1   | <u> </u>            | A 11                               |  |  |  |  |
| Upstream Adj Ramp   |   | Terrum. Leve  | '                        |                              |   |                                 |   |   | Downstrea<br>Ramp   | am Aaj                             |  |  |  |  |
| ✓ No ☐ Of   |   |   |                          |                              |   |                                 |   |   | ✓ Yes               | ✓ On                               |  |  |  |  |
|   | l <b>l</b>  |   |                          |                              |   |                                 |   |   | □ No                | ☐ Off                              |  |  |  |  |
| L <sub>up</sub> = ft  |   |   | <sub>FF</sub> = 56.0 mph |                              | S <sub>FR</sub> = 40  | 0 0 mr                          | , h                                       |   | L <sub>down</sub> = | 1300 ft                            |  |  |  |  |
| V <sub>u</sub> = veh/ł  | า   |   | • •                      | ( show lanes, L <sub>A</sub> |   | u.u iiik                        | ЛІ  |   | V <sub>D</sub> =    | 340 veh/h                          |  |  |  |  |
| Conversion t  | o pc/h Und  | der Base (  | Conditions               |                              |   |                                 |   |   |                     |                                    |  |  |  |  |
| (pc/h)  | (pc/h) V PHF Terrain %Truck                                   |   |                          |                              | %Rv   |                                 | f <sub>HV</sub>                           | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |  |  |  |  |
| Freeway   | 5350  | 0.92  | Level                    | 2                            | 0   | 0                               | .990                                      | 1.00  | 58                  | 73                                 |  |  |  |  |
| Ramp  | 740   | 0.92  | Level                    | 2                            | 0   | 0                               | .990                                      | 1.00  | 812                 |                                    |  |  |  |  |
| UpStream<br>DownStream  | 340   | 0.92  | Level                    | 2                            | 0   | +                               | 200 1.00                                  |   | 272                 |                                    |  |  |  |  |
| Downstieam  |   |   |                          |                              |   |                                 |   | 1.00<br>Diverge Areas                               | 373                 |                                    |  |  |  |  |
| Estimation o  |   | Estimation of v <sub>12</sub>   |                          |                              |   |                                 |   |   |                     |                                    |  |  |  |  |
|   | V <sub>12</sub> = V <sub>F</sub>                              | (P)   |                          |                              | <del>                                     </del>                        |                                 |   | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | -)P                 |                                    |  |  |  |  |
| L <sub>EQ</sub> =   | 12 1  | This is a strong in the strong in t | 25-3)                    |                              | L <sub>FO</sub> =   |                                 |   | Equation 25-8                                       |                     |                                    |  |  |  |  |
| P <sub>FM</sub> =   |   | Equation (E   |                          |                              | P <sub>FD</sub> =   |                                 |   | •   |                     | nihit 25-12)                       |  |  |  |  |
| V <sub>12</sub> =   | pc/h  | qua (2  |                          |                              | $P_{FD}$ = 0.576 using Equation (Exhibit 25-12)<br>$V_{12}$ = 3726 pc/h |                                 |   |   |                     |                                    |  |  |  |  |
| V <sub>3</sub> or V <sub>av34</sub>                                   | •   | (Equation 25  | 5-4 or 25-5)             |                              | V <sub>3</sub> or V <sub>av34</sub> 2147 pc/h (Equation 25-15 or 25-16  |                                 |   |   |                     |                                    |  |  |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,70                         |   |   | ,                        |                              | Is $V_3$ or $V_{av34} > 2,700$ pc/h?  Yes $\overline{\lor}$ No          |                                 |   |   |                     |                                    |  |  |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                          |   |   |                          |                              | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                          |                                 |   |   |                     |                                    |  |  |  |  |
| If Yes,V <sub>12a</sub> =   | ·=  | (Equation 25  | 5-8)                     |                              | If Yes, $V_{12a} = pc/h$ (Equation 25-18)                               |                                 |   |   |                     |                                    |  |  |  |  |
| Capacity Che  |   | <u> </u>  | ,                        |                              | Capacity  |                                 | ·   | \ 1   |                     |                                    |  |  |  |  |
|   | Actual  | С   | apacity                  | LOS F?                       |   | Actua                           |   | al Capacity   |                     | LOS F                              |  |  |  |  |
|   |   |   |                          |                              | V <sub>F</sub>  |                                 | 5873                                      | Exhibit 25-1  | 4 6780              | No                                 |  |  |  |  |
| $V_{FO}$  |   | Exhibit 25-7  |                          |                              | $V_{FO} = V_{F}$  | - V <sub>R</sub>                | 5061                                      | Exhibit 25-1  | 4 6780              | No                                 |  |  |  |  |
|   |   |   |                          |                              | V <sub>R</sub>  |                                 | 812                                       | Exhibit 25-3  | 2100                | No                                 |  |  |  |  |
| Flow Enterin  | g Merge In  | fluence A   | rea                      | 8                            |   | terir                           | ng Dive                                   | rge Influen   | ce Area             | •                                  |  |  |  |  |
|   | Actual  | ı   | Desirable                | Violation?                   |   | 1                               | Actual                                    | Max Desirab   |                     | Violation'                         |  |  |  |  |
| V <sub>R12</sub>  |   | Exhibit 25-7  |                          |                              | V <sub>12</sub>   |                                 | 3726                                      | Exhibit 25-14                                       | 4400:All            | No                                 |  |  |  |  |
| Level of Serv   |   | •   |                          |                              | Level of  | Ser                             | vice De                                   | eterminatio   | n (if not           | F)                                 |  |  |  |  |
| $D_{R} = 5.475 + 0$   | .00734 v <sub>R</sub> +                                       | 0.0078 V <sub>12</sub> -  | 0.00627 L <sub>A</sub>   |                              |   | O <sub>R</sub> = 4              | 4.252 + 0                                 | ).0086 V <sub>12</sub> - 0.                         | 009 L <sub>D</sub>  |                                    |  |  |  |  |
| D <sub>R</sub> = (pc/mi/ln)   |   |   |                          |                              |   | $D_R = 33.6 \text{ (pc/mi/ln)}$ |   |   |                     |                                    |  |  |  |  |
| LOS = (Exhibit 25-4)  |   |   |                          |                              |   | LOS = D (Exhibit 25-4)          |   |   |                     |                                    |  |  |  |  |
| Speed Deteri  | mination  |   |                          |                              | Speed D   | eter                            | minati                                    | on  |                     |                                    |  |  |  |  |
| M <sub>S</sub> = (Exibit 2  | 5-19)   |   |                          |                              |   | •                               | xhibit 25                                 | *   |                     |                                    |  |  |  |  |
| $S_R$ = mph (Exhibit 25-19)   |   |   |                          |                              |   | .9 mpł                          | S <sub>R</sub> = 49.9 mph (Exhibit 25-19) |   |                     |                                    |  |  |  |  |
| S <sub>R</sub> = mph (Ext   |   |   |                          |                              |   |                                 | S <sub>0</sub> = 57.0 mph (Exhibit 25-19) |   |                     |                                    |  |  |  |  |
| S <sub>0</sub> = mph (Ext   |   |   |                          |                              | $S_0 = 57$  | .0 mpł                          | ı (Exhibit                                | 25-19)  |                     |                                    |  |  |  |  |

| • • • •  |   |                          |                          |                              | ONS WO   |  |                      |                             |                  |                                    |  |  |  |
|--|---|--------------------------|--------------------------|------------------------------|--|--|----------------------|-----------------------------|------------------|------------------------------------|--|--|--|
| General Info                                     |   |                          |                          | Site Infor                   |  |  |                      |                             |                  |                                    |  |  |  |
| Date Performed                                   | Agency or Company CHA Junction Date Performed 02/14/12 Jurisdiction Analysis Time Period AM Analysis Year |                          |                          |                              | Travel Southbound I-87 Exit 4 SB Off NYSDOT 2016 Flyover |  |                      |                             |                  |                                    |  |  |  |
| Project Description                              |   |                          |                          | analysis real                | •  | 20101  | 1,000                |                             |                  |                                    |  |  |  |
| Inputs   |   |                          |                          |                              |  |  |                      |                             |                  |                                    |  |  |  |
| Upstream Adj Ramp                                |   |                          |                          |                              |  | Downstrea<br>Ramp  | m Adj                |                             |                  |                                    |  |  |  |
| ☐ Yes ☐ O  | n   |                          |                          |                              |  |  |                      |                             | ✓ Yes            | <b>☑</b> On                        |  |  |  |
| ™ No □ O   | ff  |                          |                          |                              |  |  |                      |                             | □ No             | ☐ Off                              |  |  |  |
| L <sub>up</sub> = ft                             |   | S                        | <sub>FF</sub> = 56.0 mph |                              | S <sub>FR</sub> = 4                                      | 0.0 mp   | h                    |                             | down             | 1585 ft                            |  |  |  |
| $V_u = veh/I$                                    |   |                          | Sketch (                 | ( show lanes, L <sub>A</sub> |  |  |                      |                             | V <sub>D</sub> = | 600 veh/                           |  |  |  |
| Conversion t                                     |   | der Base (               | Conditions               |                              |  |  |                      |                             |                  |                                    |  |  |  |
| (pc/h)   | (pc/h) V PHF Terrain %Truck   |                          |                          |                              | %Rv  | <u> </u>   | f <sub>HV</sub>      | f <sub>p</sub>              | v = V/PHF        | x f <sub>HV</sub> x f <sub>p</sub> |  |  |  |
| Freeway  | 5300  | 0.92                     | Level                    | 2                            | 0  | 0.   | 990                  | 1.00                        | 58               | 18                                 |  |  |  |
| Ramp   | 560   | 0.92                     | Level                    | 2                            | 0  | 0.   | 990                  | 1.00                        | 61               | 15                                 |  |  |  |
| UpStream   |   | <b> </b>                 |                          | <del> </del>                 |  | +-   |                      |                             |                  |                                    |  |  |  |
| DownStream                                       | 600   | 0.93                     | Level                    | 5                            | 0  | 0.   | 976                  | 1.00<br>Diverge Areas       | 66               | 1                                  |  |  |  |
| Merge Areas <b>Estimation of v</b> <sub>12</sub> |   |                          |                          |                              |  | Estimation of V <sub>12</sub>                              |                      |                             |                  |                                    |  |  |  |
| Littination o                                    |   | <i>,</i>                 |                          |                              | LStillati  | 011 0  |                      |                             |                  |                                    |  |  |  |
|  | $V_{12} = V_F$  |                          |                          |                              |  |  |                      | $= V_R + (V_F - V_F)$       |                  |                                    |  |  |  |
| L <sub>EQ</sub> =                                |   | ation 25-2 or            |                          |                              | L <sub>EQ</sub> =  |  |                      | Equation 25-8               |                  |                                    |  |  |  |
| P <sub>FM</sub> =                                | using   | Equation (E              | xhibit 25-5)             |                              | P <sub>FD</sub> =  |  | 0                    | .586 using Ed               | uation (Exh      | bit 25-12)                         |  |  |  |
| V <sub>12</sub> =                                | pc/h  |                          |                          |                              | $V_{12} = 3665 \text{ pc/h}$                             |  |                      |                             |                  |                                    |  |  |  |
| V <sub>3</sub> or V <sub>av34</sub>              |   | (Equation 25             | -4 or 25-5)              |                              | $V_3$ or $V_{av34}$ 2153 pc/h (Equation 25-15 or 25-16   |  |                      |                             |                  |                                    |  |  |  |
| Is $V_3$ or $V_{av34} > 2.7$                     | 00 pc/h?  | s 🗆 No                   |                          |                              | Is V <sub>3</sub> or V <sub>av3</sub>                    | $_{34} > 2.7$  | 00 pc/h?             | TYes  ✓ No                  |                  |                                    |  |  |  |
| Is $V_3$ or $V_{av34} > 1.5$                     | * V <sub>12</sub> /2  | s 🗆 No                   |                          |                              | Is V <sub>3</sub> or V <sub>av3</sub>                    | <sub>34</sub> > 1.5  | * V <sub>12</sub> /2 | Tyes  ✓ No                  |                  |                                    |  |  |  |
| If Yes,V <sub>12a</sub> =                        | pc/h  | (Equation 25             | -8)                      |                              | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)          |  |                      |                             |                  |                                    |  |  |  |
| Capacity Che                                     | ecks  |                          |                          |                              | Capacity   | y Ch   | ecks                 |                             |                  |                                    |  |  |  |
|  | Actual  | С                        | apacity                  | LOS F?                       |  | Actual   |                      | Ca                          | pacity           | LOS F                              |  |  |  |
|  |   |                          |                          |                              | V <sub>F</sub>   |  | 5818                 | Exhibit 25-1                | 4 6780           | No                                 |  |  |  |
| V <sub>FO</sub>                                  |   | Exhibit 25-7             |                          |                              | $V_{FO} = V_{F}$   | - V <sub>R</sub>   | 5203                 | Exhibit 25-1                | 4 6780           | No                                 |  |  |  |
| 10   |   |                          |                          |                              | V <sub>R</sub>   |  | 615                  | Exhibit 25-3                | 3 2100           | No                                 |  |  |  |
| Flow Enterin                                     | a Morao Ir  | ofluence A               | <u></u>                  |                              | Flow Entering Diverge Influence Area                     |  |                      |                             |                  |                                    |  |  |  |
| i iow Eiileiin                                   | Actual  | 1                        | <b>rea</b><br>Desirable  | Violation?                   | FIOW EN  | -  | Actual               | Max Desiral                 |                  | Violation                          |  |  |  |
| V <sub>R12</sub>                                 | / iciuai  | Exhibit 25-7             | D G SII UDIO             | violation:                   | V <sub>12</sub>  | _  | 3665                 | Exhibit 25-14               | 4400:All         | No                                 |  |  |  |
| Level of Serv                                    | ice Deterr  |                          | f not F)                 |                              |  |  |                      | eterminatio                 | l                |                                    |  |  |  |
| $D_{R} = 5.475 + 0$                              |   |                          |                          |                              | _  |  |                      | 0.0086 V <sub>12</sub> - 0. | _                | ,                                  |  |  |  |
| $D_R = 3.473 + 0$<br>$D_R = (pc/mi)$             |   | 0.0070 V <sub>12</sub> - | 0.00021 LA               |                              |  | • • •  |                      | 12 - 0.                     | OO3 LD           |                                    |  |  |  |
| LOS = (Exhibit 25-4)                             |   |                          |                          |                              |  | D <sub>R</sub> = 26.3 (pc/mi/ln)<br>LOS = C (Exhibit 25-4) |                      |                             |                  |                                    |  |  |  |
|  |   |                          |                          |                              |  | •  |                      | <u> </u>                    |                  |                                    |  |  |  |
| Speed Deter                                      |   |                          |                          |                              | Speed D  |  |                      |                             |                  |                                    |  |  |  |
| $M_S = $ (Exibit 2                               |   |                          |                          |                              | 1. "   | •  | xhibit 25            | *                           |                  |                                    |  |  |  |
|  | nibit 25-19)  |                          |                          |                              | 1  | -  | (Exhibit             |                             |                  |                                    |  |  |  |
| S <sub>0</sub> = mph (Exhibit 25-19)             |   |                          |                          |                              |  | S <sub>0</sub> = 56.9 mph (Exhibit 25-19)                  |                      |                             |                  |                                    |  |  |  |
|  | nibit 25-14)  |                          | 1 -                      | -                            |  |  |                      |                             |                  |                                    |  |  |  |

|  | RAI                              | MPS AND                                 | RAMP JUNG                  | <u>CTIONS W</u>  | <u>ORKSHE</u>                         | ET_  |          |                         |                      |                                    |
|--|----------------------------------|---|----------------------------|--|---------------------------------------|--|----------|-------------------------|----------------------|------------------------------------|
| General Info   | rmation                          |   |                            | Site Infor   | mation                                |  |          |                         |                      |                                    |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Perio | 02/14                            | 1/12                                    | Jui<br>Jui                 | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | <u> </u>                              | Southboun<br>Exit 4 SB (<br>NYSDOT<br>2016 Flyov | On-Ramp  | )                       |                      |                                    |
| Project Description  |                                  |   | All                        | arysis i car   |                                       | 201011y01  | CI       |                         |                      |                                    |
| nputs  | LAIC I                           |   |                            |  |                                       |  |          |                         |                      |                                    |
| Jpstream Adj Ram   | 0                                | Terrain: Level                          |                            |  |                                       |  |          |                         | Downstre<br>Ramp     | am Adj                             |
| Yes C  | n                                |   |                            |  |                                       |  |          |                         | ☐ Yes                | □ On                               |
| □ No       C   | ff                               |   |                            |  |                                       |  |          |                         | ™ No                 | □ Off                              |
| - <sub>up</sub> = 1585   | ft                               |   | F/ 0 1                     |  |                                       | 0.0 1  |          |                         | L <sub>down</sub> =  | ft                                 |
| / <sub>u</sub> = 560 v   | /eh/h                            | 5                                       | FF = 56.0 mph<br>Sketch (s | show lanes, L <sub>A</sub> ,                           | $S_{FR} = 40$<br>$L_{D'}V_{R'}V_{f}$  | 0.0 mph  |          |                         | V <sub>D</sub> =     | veh/h                              |
| Conversion   | to pc/h Und                      | der Base C                              | Conditions                 |  |                                       |  |          |                         |                      |                                    |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                                     | Terrain                    | %Truck   | %Rv                                   | f <sub>HV</sub>                                  |          | $f_p$                   | v = V/PHF            | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 4750                             | 0.92                                    | Level                      | 2  | 0                                     | 0.990  |          | 1.00                    | !                    | 5215                               |
| Ramp   | 600                              | 0.93                                    | Level                      | 5  | 0                                     | 0.976  |          | 1.00                    |                      | 661                                |
| UpStream   | 560                              | 0.92                                    | Level                      | 2  | 0                                     | 0.990  | _        | 1.00                    |                      | 615                                |
| DownStream   |                                  | Merge Areas                             |                            |  |                                       |  | Di       | verge Areas             | <u> </u>             |                                    |
| Estimation o   |                                  | werge Areas                             |                            |  | Estimati                              | on of v  |          | verge Areas             |                      |                                    |
|  | V <sub>12</sub> = V <sub>F</sub> | ( P <sub>EM</sub> )                     |                            |  |                                       |  |          | . (\/_\/                | / \D                 |                                    |
| - <sub>EQ</sub> =  |                                  | • | 25-2 or 25-3)              |  | _                                     |  |          | R + (V <sub>F</sub> - V |                      | n)                                 |
| P <sub>FM</sub> =  |                                  |   | on (Exhibit 25-5)          |  | L <sub>EQ</sub> =                     |  |          | Equation 25             |                      |                                    |
| ' <sub>12</sub> =  | 3204                             |   | OTT (EXTINOR 20 0)         |  | P <sub>FD</sub> =                     |  |          | sing Equat              | ion (Exnibit         | 25-12)                             |
|  |                                  |   | n 25-4 or 25-              |  | V <sub>12</sub> =                     |  | -        | c/h<br>-//- (=+         | 25 15 25             | 1/)                                |
| 7 <sub>3</sub> or V <sub>av34</sub>                                  | 5)                               |   |                            |  | V <sub>3</sub> or V <sub>av34</sub>   | 2 700  |          | c/h (Equation           |                      | -10)                               |
| Is $V_3$ or $V_{av34} > 2.7$   |                                  |   |                            |  | Is V <sub>3</sub> or V <sub>av3</sub> | -  |          |                         |                      |                                    |
| Is $V_3$ or $V_{av34} > 1.5$   | :=                               |   |                            |  | Is V <sub>3</sub> or V <sub>av3</sub> | •  |          |                         |                      |                                    |
| Yes,V <sub>12a</sub> =   |                                  | (Equation 25                            | -8)                        |  | If Yes,V <sub>12a</sub> =             |  |          | c/h (Equati             | On 25-18)            |                                    |
| Capacity Ch  | ecks                             |   |                            |  | Capacity                              | / Chec   | ks       |                         |                      |                                    |
|  | Actual                           | Ca                                      | apacity                    | LOS F?   | <u> </u>                              |  | Actual   | 7                       | apacity              | LOS F                              |
|  |                                  |   |                            |  | V <sub>F</sub>                        |  |          | Exhibit 25              | -14                  | <del></del>                        |
| $V_{FO}$   | 5876                             | Exhibit 25-7                            |                            | No   | $V_{FO} = V_{F}$                      | - V <sub>R</sub>                                 |          | Exhibit 25              | -14                  |                                    |
|  |                                  |   |                            |  | V <sub>R</sub>                        |  |          | Exhibit 25              | 5-3                  |                                    |
| Flow Enterin   | ig Merge In                      |   |                            |  | Flow En                               | tering   | Diver    |                         |                      |                                    |
|  | Actual                           |   | Desirable                  | Violation?   |                                       | Actu   |          | Max Des                 | irable               | Violation?                         |
| V <sub>R12</sub>   | 3865                             | Exhibit 25-7                            | 4600:All                   | No   | V <sub>12</sub>                       | <u> </u>   |          | xhibit 25-14            |                      |                                    |
| Level of Ser   |                                  |   |                            |  |                                       |  |          | erminati                |                      | ot F)                              |
| $D_{R} = 5.475$  | + 0.00734 v <sub>R</sub> + 0     | 0.0078 V <sub>12</sub> - 0.0            | 0627 L <sub>A</sub>        |  |                                       | $O_{R} = 4.25$                                   | 52 + 0.0 | 0086 V <sub>12</sub> -  | 0.009 L <sub>D</sub> |                                    |
| Ι  | c/mi/ln)                         |   |                            |  |                                       | c/mi/ln)   |          |                         |                      |                                    |
|  | ibit 25-4)                       |   |                            |  | LOS = (E                              | xhibit 25  | 5-4)     |                         |                      |                                    |
| Speed Deter  | mination                         |   |                            |  | Speed D                               | etermi   | inatio   | n                       |                      |                                    |
| M <sub>S</sub> = 0.402 (Ex   | kibit 25-19)                     |   |                            |  | $D_s = (E)$                           | xhibit 25-1                                      | 9)       |                         |                      |                                    |
| =  | (Exhibit 25-19)                  |   |                            |  | S <sub>R</sub> = mp                   | oh (Exhibit                                      | 25-19)   |                         |                      |                                    |
|  | (Exhibit 25-19)                  |   |                            |  | $S_0 = mp$                            | oh (Exhibit                                      | 25-19)   |                         |                      |                                    |
|  | (Exhibit 25-14)                  |   |                            |  | S = mp                                | oh (Exhibit                                      | 25-15)   |                         |                      |                                    |
|  |                                  |   |                            |  | HCS+ <sup>TM</sup>                    |  |          |                         |                      |                                    |

|  |   | MPS AND                      | RAMP JUNG                  |  |                                     | <u> </u>  |                                    |                                     |                                      |
|--|---|------------------------------|----------------------------|--|-------------------------------------|---|------------------------------------|-------------------------------------|--------------------------------------|
| General Infor  | mation  |                              |                            | Site Infor   | mation                              |   |                                    |                                     |                                      |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period   |   | 1/12                         | Ju<br>Ju                   | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | E                                   | Southbound I-<br>Exit 5 SB On-F<br>NYSDOT<br>2016 Flyover |                                    |                                     |                                      |
| Project Description  | Exit 4  |                              |                            |  |                                     |   |                                    |                                     |                                      |
| Inputs   |   | h                            |                            |  |                                     |   |                                    |                                     |                                      |
| Jpstream Adj Ramp  |   | Terrain: Level               |                            |  |                                     |   |                                    | Downstro<br>Ramp                    | eam Adj                              |
| Yes □ On No □ Off  |   |                              |                            |  |                                     |   |                                    | ✓ Yes                               | □ On                                 |
| M NO II OII  |   |                              |                            |  |                                     |   |                                    | □ No                                | ✓ Off                                |
| - <sub>up</sub> = ft   |   |                              | F/ 0 b                     |  | 0 4                                 | 2 0 h   |                                    | L <sub>down</sub> =                 | 4700 ft                              |
| / <sub>u</sub> = veh/h   |   | 5                            | FF = 56.0 mph<br>Sketch (s | show lanes, L <sub>A</sub> ,                           | $S_{FR} = 40$ $L_{D'}V_{R'}V_{f}$   | J.U mpn   |                                    | V <sub>D</sub> =                    | 560 veh/h                            |
| Conversion to  | pc/h Und  | der Base C                   | Conditions                 |  |                                     |   |                                    | ·                                   |                                      |
| (pc/h)   | V<br>(Veh/hr)                                     | PHF                          | Terrain                    | %Truck   | %Rv                                 | f <sub>HV</sub>   | f <sub>p</sub>                     | v = V/PH                            | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 4950  | 0.92                         | Level                      | 2  | 0                                   | 0.990   | 1.00                               |                                     | 5434                                 |
| Ramp   | 340   | 0.93                         | Level                      | 3  | 0                                   | 0.985   | 1.00                               |                                     | 371                                  |
| UpStream   |   |                              |                            |  |                                     |   |                                    |                                     |                                      |
| DownStream   | 560   | 0.92                         | Level                      | 2  | 0                                   | 0.990   | 1.00                               |                                     | 615                                  |
| Estimation of  | Merge Areas<br><b>stimation of v<sub>12</sub></b> |                              |                            |  |                                     | on of w   | Diverge Ar                         | eas                                 |                                      |
| ะรแกลแบก บา  | V <sub>12</sub>                                   |                              |                            |  | Esuman                              | on of v <sub>12</sub>                                     |                                    |                                     |                                      |
|  | $V_{12} = V_F$                                    | (P <sub>FM</sub> )           |                            |  |                                     | V <sub>12</sub>   | = V <sub>R</sub> + (V <sub>F</sub> | - V <sub>R</sub> )P <sub>FD</sub>   |                                      |
| -EQ =  | 2472.86   | (Equation :                  | 25-2 or 25-3)              |  | L <sub>EQ</sub> =                   | 12  |                                    | n 25-8 or 25-                       | ·9)                                  |
| P <sub>FM</sub> =  | 0.614   | using Equation               | on (Exhibit 25-5)          |  | P <sub>FD</sub> =                   |   |                                    | uation (Exhibi                      |                                      |
| / <sub>12</sub> =  | 3336 p  | oc/h                         |                            |  | V <sub>12</sub> =                   |   | pc/h                               | (                                   | ,                                    |
| / <sub>3</sub> or V <sub>av34</sub>  | 2098 բ  | oc/h (Equatio                | n 25-4 or 25-              |  | V <sub>3</sub> or V <sub>av34</sub> |   | •                                  | ition 25-15 or 2                    | 5-16)                                |
|  | 5)  |                              |                            |  |                                     | < 2.700 nc/h  | ? TYes                             |                                     | J-10)                                |
| Is $V_3$ or $V_{av34} > 2,700$   |   |                              |                            |  |                                     | -   |                                    |                                     |                                      |
| Is $V_3$ or $V_{av34} > 1.5$ *   |   |                              |                            |  |                                     | 4 > 1.5 V <sub>12</sub> /2                                | ☐ Yes ☐                            |                                     |                                      |
| Yes,V <sub>12a</sub> =   | pc/h (  | (Equation 25                 | -8)                        |  | If Yes,V <sub>12a</sub> =           |   | pc/n (Equ                          | uation 25-18                        | )                                    |
| Capacity Che   | cks   |                              |                            |  | Capacity                            | Checks  |                                    |                                     |                                      |
|  | Actual  | Ca                           | pacity                     | LOS F?   |                                     | Actu  | ıal                                | Capacity                            | LOS F                                |
|  |   |                              |                            |  | $V_{F}$                             |   | Exhibit                            | t 25-14                             |                                      |
| $V_{FO}$   | 5805  | Exhibit 25-7                 |                            | No   | $V_{FO} = V_{F}$                    | · V <sub>R</sub>  | Exhibit                            | t 25-14                             |                                      |
|  |   |                              |                            |  | $V_R$                               |   | Exhibit                            | t 25-3                              |                                      |
| Flow Entering  | Merge In  | fluence A                    | rea                        |  | •                                   | terina Di   | verae Infl                         | uence Ar                            | <u>'</u>                             |
| 2  | Actual  |                              | )esirable                  | Violation?   | <del> </del>                        | Actual  |                                    | Desirable                           | Violation?                           |
| V <sub>R12</sub>   | 3707  | Exhibit 25-7                 | 4600:All                   | No   | V <sub>12</sub>                     | 1   | Exhibit 25-                        |                                     | 1                                    |
| Level of Servi   | ice Detern  | nination (i                  | f not F)                   |  |                                     | Service   |                                    | ation (if n                         | ot F)                                |
|  |   | 0.0078 V <sub>12</sub> - 0.0 |                            |  |                                     |   |                                    | <sub>2</sub> - 0.009 L <sub>D</sub> | ,                                    |
| $O_{R} = 26.1 \text{ (pc)}$  |   | 12                           | А                          |  |                                     | c/mi/ln)  | 1                                  | ZD                                  |                                      |
| $C_R = C_R $ |   |                              |                            |  |                                     | xhibit 25-4)  |                                    |                                     |                                      |
| Speed Detern   | •   |                              |                            |  | `                                   | etermina  | tion                               |                                     |                                      |
| •  |   |                              |                            |  | <del>-</del>                        | chibit 25-19)   | uon                                |                                     |                                      |
| $M_{\rm S} = 0.376  (Exit)$  |   |                              |                            |  | 3                                   |   | 10)                                |                                     |                                      |
|  | Exhibit 25-19)                                    |                              |                            |  | ., .                                | h (Exhibit 25-  |                                    |                                     |                                      |
| . = /  | Exhibit 25-19)                                    |                              |                            |  | $S_0 = mp$                          | h (Exhibit 25-  | 19)                                |                                     |                                      |
|  | Exhibit 25-14)                                    |                              |                            |  |                                     | h (Exhibit 25-  | •                                  |                                     |                                      |

|   |  |                            | FREEWA                | Y WEA\   | /ING WOF   | RKSHEE         | Τ              |  |              |
|---|--|----------------------------|-----------------------|----------|--|----------------|----------------|--|--------------|
| Genera  | I Informat   | ion                        |                       |          | Site Info  | rmation        |                |  |              |
| Analyst<br>Agency/Co<br>Date Perfor<br>Analysis Tir | rmed   | SEB<br>CHA<br>02/14/<br>AM | 12                    |          | Freeway/Dir<br>Weaving Sec<br>Jurisdiction<br>Analysis Yea | g Location     | Exit 2<br>NYSE | lorthbound<br>E on to 2W o<br>OOT<br>Flyover | ff           |
| Inputs  |  |                            |                       |          | •  |                |                |  |              |
| Weaving nu  | ee-flow speed,<br>umber of lanes,<br>eg length, L (ft) |                            | 56<br>4<br>815<br>Lev |          | Weaving type<br>Volume ratio<br>Weaving ratio              | , VR           |                |  | 27<br>31     |
| Conver  | sions to p   | c/h Unde                   | r Base C              | ondition | าร   |                |                |  |              |
| (pc/h)  | V  | PHF                        | Truck %               | RV %     | E <sub>T</sub>   | E <sub>R</sub> | $f_{HV}$       | fp   | V            |
| V <sub>o1</sub>                                     | 2550   | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990          | 1.00   | 2799         |
| V <sub>o2</sub>                                     | 0  | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990          | 1.00   | 0            |
| V <sub>w1</sub>                                     | 660  | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990          | 1.00   | 724          |
| V <sub>w2</sub>                                     | 300  | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990          | 1.00   | 329          |
| V <sub>W</sub>                                      | -  | ļ                          | <u> </u>              | 1053     | V <sub>nw</sub>  |                |                |  | 2799         |
| V   | -  |                            |                       |          | TIW  | J              |                |  | 3852         |
|   | g and No   | n-Weavin                   | a Speeds              | <br>S    |  |                |                |  |              |
|   | <u>J</u>   |                            | Unconstr              |          |  |                | Cons           | trained                                      |              |
|   |  | Weaving                    |                       |          | ving (i = nw)  | Weavir         | ng (i = w)     | Non-Wea                                      | ving ( = nw) |
| a (Exhibit 2  |  | 0.15                       |                       |          | 0035   |                |                |  |              |
| b (Exhibit 2<br>c (Exhibit 2                        |  | 2.20<br>0.9                |                       |          | .30  |                |                |  |              |
| d (Exhibit 2  |  | 0.9                        |                       |          | .30<br>.75   |                |                |  |              |
| Weaving intens                                      |  | 0.94                       |                       |          | .46  |                |                |  |              |
| Weaving and n                                       | non-weaving  | 38.7                       |                       |          | 5.59   |                |                |  |              |
| speeds, Si (mi/<br>Number of                        | lanes required   | for unconstrai             | ned operation,        | Nw       | 1.37   | <u> </u>       |                | ļ  |              |
| Maximum r   | number of lanes  | s, Nw (max)                |                       |          | 1.40   |                |                |  |              |
|   | If Nw < Nw   | · ,                        |                       |          |  |                | v (max) const  | rained operat                                | ion          |
|   | ig Segmer  |                            | Density,              | 1        | f Service,   | and Cap        | acity          |  |              |
| <b>─</b>  | egment speed,  | <u> </u>                   |                       | 44.14    |  |                |                |  |              |
|   | egment density,  | D (pc/mi/ln)               |                       | 21.82    |  |                |                |  |              |
| Level of ser  |  | / "                        |                       | С        |  |                |                |  |              |
|   | base condition   | D ·                        |                       | 6336     |  |                |                |  |              |
|   | s a 15-minute fl                                       |                            |                       | 6273     |  |                |                |  |              |
|   | s a full-hour vol                                      | ume, c <sub>h</sub> (veh/l | 1)                    | 5771     |  |                |                |  |              |
| Notes   |  |                            |                       |          |  |                |                |  |              |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|   |  |                            | FREEWA                | Y WEAV       | /ING WOF   | RKSHEE         | Г   |                 |              |
|---|--|----------------------------|-----------------------|--------------|--|----------------|---|-----------------|--------------|
| General   | Informat   | ion                        |                       |              | Site Info  | rmation        |   |                 |              |
| Analyst<br>Agency/Con<br>Date Perforr<br>Analysis Tim | ned  | SEB<br>CHA<br>02/14/<br>AM | 12                    |              | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | g Location     | I-87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2016 Flyover |                 |              |
| Inputs  |  |                            |                       |              |  |                |   |                 |              |
| Weaving nu  | e-flow speed, and the speed of lanes, greatly length, L (ft) | 11 '                       | 56<br>4<br>810<br>Lev |              | Weaving type<br>Volume ratio<br>Weaving rati               | , VR           |   | A<br>0.:<br>0.: |              |
| Convers   | sions to p   | c/h Unde                   | r Base C              | ondition     | าร   |                |   |                 | _            |
| (pc/h)  | V  | PHF                        | Truck %               | RV %         | E <sub>T</sub>   | E <sub>R</sub> | $f_{HV}$  | fp              | V            |
| $V_{o1}$  | 3860   | 0.92                       | 2                     | 0            | 1.5  | 1.2            | 0.990   | 1.00            | 4237         |
| $V_{o2}$  | 0  | 0.92                       | 2                     | 0            | 1.5  | 1.2            | 0.990   | 1.00            | 0            |
| $V_{w1}$  | 740  | 0.92                       | 2                     | 0            | 1.5  | 1.2            | 0.990   | 1.00            | 812          |
| V <sub>w2</sub>                                       | 340  | 0.92                       | 2                     | 0            | 1.5  | 1.2            | 0.990   | 1.00            | 373          |
| V <sub>W</sub>  |  |                            |                       | 1185         | V <sub>nw</sub>  |                |   |                 | 4237         |
| V   | 1  |                            |                       |              | I TIW  | ı              |   |                 | 5422         |
| Weaving   | and No   | n-Weavin                   | g Speeds              | <br>S        |  |                |   |                 |              |
|   |  |                            | Unconstr              | ained        |  |                |   | trained         |              |
| <u> </u>  |  | Weaving                    |                       |              | ving (i = nw)  | Weavir         | ıg (i = w)  | Non-Wea         | ving ( = nw) |
| a (Exhibit 24<br>b (Exhibit 24                        |  | 0.15<br>2.20               |                       |              | .00  |                |   |                 |              |
| c (Exhibit 24   |  | 0.97                       |                       | <del>1</del> | .30  |                |   |                 |              |
| d (Exhibit 24   |  | 0.80                       |                       |              | .75  |                |   |                 |              |
| Weaving intensi                                       |  | 1.19                       |                       | 1            | .60  |                |   |                 |              |
| Weaving and no<br>speeds, Si (mi/h                    |  | 35.9                       | 8                     | 43           | 3.76   |                |   |                 |              |
| Number of la  | anes required  | for unconstrain            | ned operation,        | Nw           | 1.24   |                |   |                 |              |
| 1   | umber of lanes   | , ,                        |                       |              | 1.40   | =              |   |                 |              |
|   |  | (max) uncons               |                       |              | _  |                | (max) constr  | rained operati  | on           |
|   |  | S (mi/h)                   |                       | 41.79        | f Service,   | and Cap        | acity   |                 |              |
|   | gment density,   |                            |                       | 32.44        |  |                |   |                 |              |
| Level of serv   |  | , D (pormini)              |                       | D            |  |                |   |                 |              |
|   | pase condition   | n, c <sub>h</sub> (pc/h)   |                       | 6633         |  |                |   |                 |              |
|   |  | ow rate, c (vel            | n/h)                  | 6567         |  |                |   |                 |              |
|   | Capacity as a full-hour volume, c <sub>h</sub> (veh/h)       |                            |                       | 6042         |  |                |   |                 |              |
| Notes   |  | . 11.                      | •                     |              |  |                |   |                 |              |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

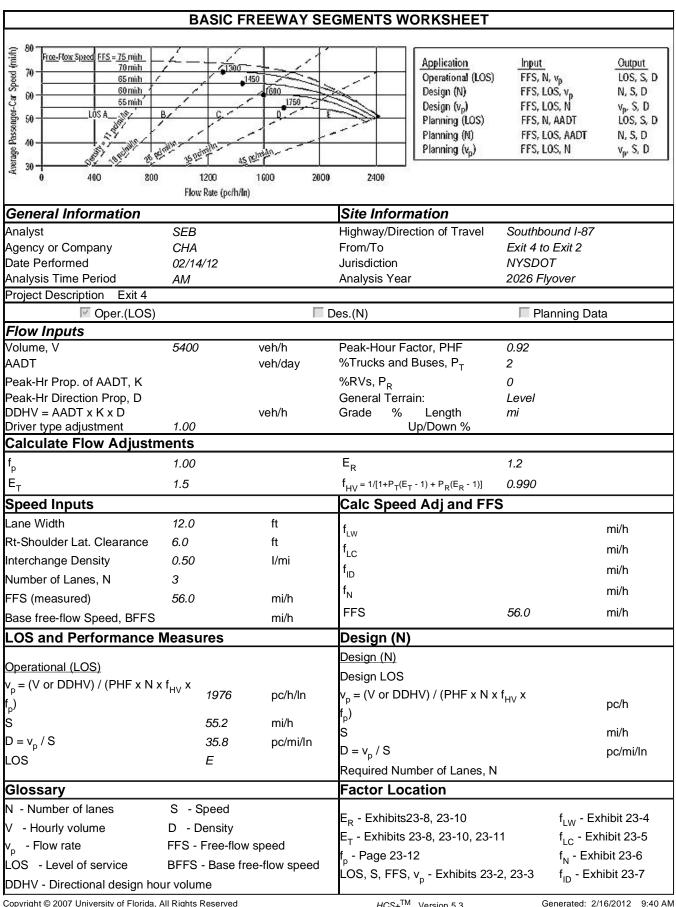
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  | BASIC F                  | REEWAY SE                               | GMENTS W                    | ORKSHEET   |   |  |
|--|--------------------------|---|-----------------------------|--|---|--|
| S0   Free-Flow Speed   FFS = 75 mith   70 mith   70 mith   70 mith   65 mith   65 mith   55 mith   55 mith   75 mi | B C C                    | 150 (600<br>1750<br>0 1750<br>1600 2001 | 0 2400                      | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, N<br>FFS, LOS<br>FFS, N, A<br>FFS, LOS<br>FFS, LOS | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D |
| General Information  | Flow Rate (pc/h/lin      | )                                       | Site Inforn                 | nation   |   |  |
| Analyst  | SEB                      |   |                             | ction of Travel  | Northbou  | nd I-87  |
| Agency or Company  | CHA                      |   | From/To                     | olion of thavel  | Exit 2 to E   |  |
| Date Performed   | 02/14/12                 |   | Jurisdiction                |  | NYSDOT  |  |
| Analysis Time Period   | AM                       |   | Analysis Year               | r  | 2026 Flyc   | over   |
| Project Description Exit 4   |                          |   |                             |  |   |  |
| ✓ Oper.(LOS)   |                          |   | Des.(N)                     |  | ☐ Plan  | ning Data  |
| Flow Inputs  | 2250                     | la /la                                  | Peak-Hour Fa                | oston DUE  | 0.00  |  |
| Volume, V<br>AADT  | 3350                     | veh/h<br>veh/day                        | %Trucks and                 | •  | 0.92<br>2   |  |
| Peak-Hr Prop. of AADT, K   |                          | veri/day                                | %RVs, P <sub>R</sub>        | Du303, 1 T   | 0   |  |
| Peak-Hr Direction Prop, D  |                          |   | General Terra               | ain·   | Level   |  |
| DDHV = AADT x K x D  |                          | veh/h                                   | Grade %                     | Length   | mi  |  |
| Driver type adjustment   | 1.00                     |   |                             | Up/Down %  |   |  |
| Calculate Flow Adjustr   | nents                    |   |                             |  |   |  |
| $f_p$  | 1.00                     |   | E <sub>R</sub>              |  | 1.2   |  |
| E <sub>T</sub>   | 1.5                      |   | $f_{HV} = 1/[1 + P_T(E_T)]$ | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990   |  |
| Speed Inputs   |                          |   |                             | d Adj and FFS  | <u> </u>  |  |
| Lane Width   | 12.0                     | ft                                      |                             | •  |   | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0                      | ft                                      | f <sub>LW</sub>             |  |   |  |
| Interchange Density  | 0.50                     | l/mi                                    | f <sub>LC</sub>             |  |   | mi/h   |
| Number of Lanes, N   | 3                        |   | $f_ID$                      |  |   | mi/h   |
| FFS (measured)   | 56.0                     | mi/h                                    | $f_N$                       |  |   | mi/h   |
| Base free-flow Speed, BFFS   | 30.0                     | mi/h                                    | FFS                         |  | 56.0  | mi/h   |
| LOS and Performance  | Moscuros                 | 1111/11                                 | Docian (N)                  | <u> </u>   |   |  |
| LOS and Performance  | Weasures                 |   | Design (N)  Design (N)      | 1  |   |  |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N   | x f <sub>HV</sub> x 1226 | pc/h/ln                                 | Design LOS                  | HV) / (PHF x N x   | f <sub>⊔√</sub> x   | _  |
| $f_p$ )  |                          | •                                       | f <sub>p</sub> )            | , ,  | 110   | pc/h   |
| S  | 56.0                     | mi/h                                    | S                           |  |   | mi/h   |
| $D = v_p / S$  | 21.9                     | pc/mi/ln                                | $D = v_p / S$               |  |   | pc/mi/ln   |
| LOS  | С                        |   | F                           | mber of Lanes, N   |   | PO/1111/111  |
| Glossary   |                          |   | Factor Loc                  |  |   |  |
| N - Number of lanes  | S - Speed                |   |                             |  |   |  |
| V - Hourly volume  | D - Density              |   | E <sub>R</sub> - Exhibits2  |  |   | f <sub>LW</sub> - Exhibit 23-4   |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow          | / speed                                 | I .                         | 23-8, 23-10, 23-1  |   | f <sub>LC</sub> - Exhibit 23-5   |
| LOS - Level of service   | BFFS - Base fr           |   | f <sub>p</sub> - Page 23-1  |  |   | f <sub>N</sub> - Exhibit 23-6  |
|  |                          | cc-now speed                            | LOS, S, FFS,                | v <sub>p</sub> - Exhibits 23-2   | 2, 23-3   | f <sub>ID</sub> - Exhibit 23-7   |
| DDHV - Directional design ho   |                          |   |                             | Version 5.3  |   | nerated: 2/16/2012 9:40  |

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2/16/2012

|  | BASIC F  | REEWAY SE                   | GMENTS W   | ORKSHEET   |   |   |
|--|--|-----------------------------|--|--|---|---|
| Wernige Passenger (mith)  20  20  20  20  20  20  20  20  20  2  | B C C  | 450<br>(600<br>1750<br>0    |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input<br>FFS, N, V<br>FFS, LOS<br>FFS, N, A<br>FFS, LOS<br>FFS, LOS | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>NADT LOS, S, D<br>S, AADT N, S, D            |
| 0 400 800  | 1200<br>Flow Rate (pc/h/lin  | 1600 2000<br>)              | 2400   |  |   |   |
| General Information  |  |                             | Site Inform  |  |   |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4                             | SEB<br>CHA<br>02/14/12<br>AM   |                             | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea  | ection of Travel   | Northboul<br>Exit 4 off<br>NYSDOT<br>2026 Flyc                      | to Exit 4 on  |
| Oper.(LOS)   |  | П                           | Des.(N)  |  | ☐ Plan  | ning Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D                    | 2200   | veh/h<br>veh/day<br>veh/h   | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade %                  | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi                                       |   |
| Driver type adjustment  Calculate Flow Adjustr   | 1.00   |                             |  | Up/Down %  |   |   |
| f <sub>p</sub>   | 1.00   |                             | E <sub>R</sub>   |  | 1.2   |   |
| E <sub>T</sub>   | 1.5  |                             |  | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990   |   |
| Speed Inputs   | 7.0  |                             |  | d Adj and FFS  |   |   |
| Lane Width   | 12.0   | ft                          |  | a riaj alia i i o  | <u> </u>  | so;/b   |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft                          | f <sub>LW</sub>  |  |   | mi/h  |
| Interchange Density  | 0.50   | I/mi                        | f <sub>LC</sub>  |  |   | mi/h  |
| Number of Lanes, N   | 3  |                             | f <sub>ID</sub>  |  |   | mi/h  |
| FFS (measured)   | 56.0   | mi/h                        | f <sub>N</sub>   |  |   | mi/h  |
| Base free-flow Speed, BFFS   |  | mi/h                        | FFS  |  | 56.0  | mi/h  |
| LOS and Performance  | Measures   |                             | Design (N)   | )  |   |   |
| Operational (LOS)  v <sub>p</sub> = (V or DDHV) / (PHF x N : f <sub>p</sub> ) S D = v <sub>p</sub> / S               | x f <sub>HV</sub> x<br>805<br>56.0<br>14.4<br>B  | pc/h/ln<br>mi/h<br>pc/mi/ln | $\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DD})$ $f_p)$ $S$ $D = v_p / S$ | )HV) / (PHF x N x f  | f <sub>HV</sub> x   | pc/h<br>mi/h<br>pc/mi/ln  |
| LOS  | Ь  |                             | Required Nur   | mber of Lanes, N   |   |   |
| Glossary   |  |                             | Factor Loc   | cation   |   |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho | S - Speed D - Density FFS - Free-flow BFFS - Base from the source with the second seco |                             | f <sub>p</sub> - Page 23-  | 23-8, 23-10, 23-11   |   | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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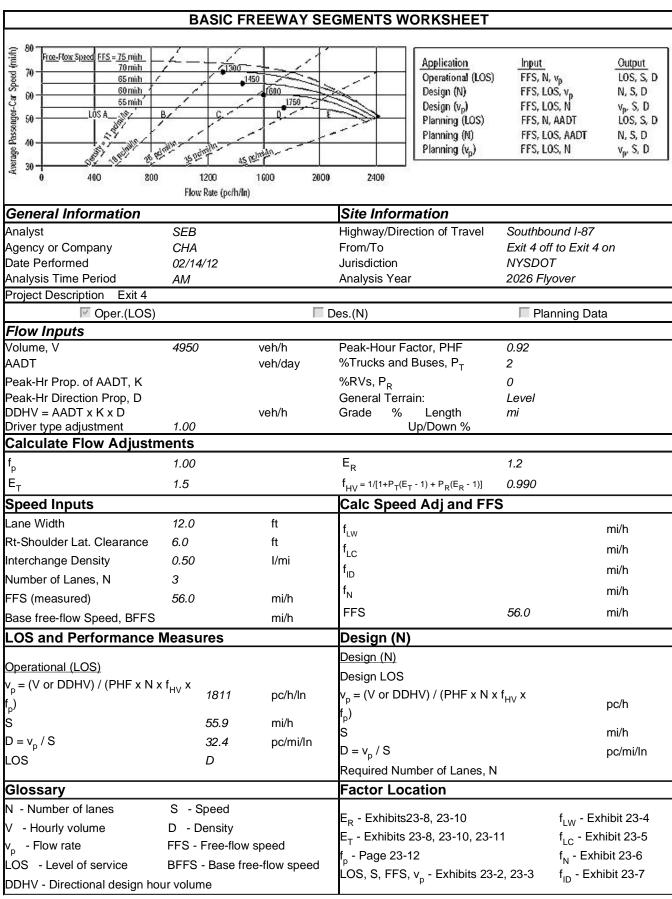
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|  | BASIC F  | REEWAY SI                                      | EGMENTS W  | ORKSHEET   |  |   |
|--|--|--|--|--|--|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 60 mith 70 mith 55 mith 70 mi | B C  | 150 (600 1750 1750 1750 1750 1750 1750 1750 17 | 0 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, 9<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D          |
| General Information  | Flow Rate (pc/h/lin                                    | )  | Site Inforn  | nation   |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/14/12<br>AM                           |  |  | ction of Travel  | Northbou<br>Exit 4 off<br>NYSDOT<br>2026 Flyd          | to Exit 4 off   |
| Oper.(LOS)   |  |  | Des.(N)  |  | ☐ Plan   | ning Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D  | 2400   | veh/h<br>veh/day<br>veh/h                      | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade %        | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi                          |   |
| Driver type adjustment   | 1.00   |  | ĺ  | Up/Down %  |  |   |
| Calculate Flow Adjustr   | 1.00   |  | E <sub>R</sub>   |  | 1.2  |   |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.5  |  |  | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990  |   |
| Speed Inputs   | 7.0  |  |  | d Adj and FFS  |  |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>3<br>56.0                       | ft<br>ft<br>I/mi<br>mi/h                       | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS                     | •  | 56.0   | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h  |
| Base free-flow Speed, BFFS   | Mossuros   | mi/h   |  | <u> </u>   |  |   |
| LOS and Performance  Operational (LOS)  v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>p</sub> )  S  D = v <sub>p</sub> / S  LOS   |  | pc/h/ln<br>mi/h<br>pc/mi/ln                    | $f_p$ )<br>S<br>D = $v_p$ / S  | HV) / (PHF x N x   | f <sub>HV</sub> x                                      | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |  |  | Factor Loc   |  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base from |  | E <sub>R</sub> - Exhibits2<br>E <sub>T</sub> - Exhibits :<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_N$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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|  | BASIC F  | REEWAY SE   | GMENTS W  | ORKSHEET   |   |   |
|--|--|---|---|--|---|---|
| Free-Flow Spzed FFS = 75 mith   70 | B C C  | 150 (600 1750 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO<br>FFS, LO<br>FFS, N,<br>FFS, LO<br>FFS, LO | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D            |
| General Information  | Flow Rate (pc/h/lin                                  | 1   | Site Infori   | mation   |   |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/14/12<br>AM                         |   | -   | ection of Travel   | Northbou<br>Exit 4 to<br>NYSDOT<br>2026 Fly                             | Exit 5<br>-   |
| ✓ Oper.(LOS)   |  |   | Des.(N)   |  | ☐ Plar  | nning Data  |
| Flow Inputs  Volume, V  AADT  Peak-Hr Prop. of AADT, K  Peak-Hr Direction Prop, D  DDHV = AADT x K x D  Driver type adjustment   | 2750   | veh/h<br>veh/day<br>veh/h                         | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terr<br>Grade % | d Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi   |   |
| Calculate Flow Adjustr   |  |   |   | Op/Down 70   |   |   |
| f <sub>p</sub>   | 1.00   |   | E <sub>R</sub>  |  | 1.2   |   |
| E <sub>T</sub>   | 1.5  |   | f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E                                      | E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990   |   |
| Speed Inputs   |  |   | Calc Spee   | ed Adj and FFS   | 3   |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>4<br>56.0                     | ft<br>ft<br>I/mi<br>mi/h                          | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub>                |  | 50.0  | mi/h<br>mi/h<br>mi/h<br>mi/h  |
| Base free-flow Speed, BFFS   |  | mi/h  | FFS   |  | 56.0  | mi/h  |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ )  S $D = v_p / S$ LOS   |  | pc/h/ln<br>mi/h<br>pc/mi/ln                       | $f_p$ )<br>S<br>D = $v_p$ / S   | •  | f <sub>HV</sub> x   | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |  |   | Factor Lo   | cation   |   | -   |
| N - Number of lanes<br>V - Hourly volume<br>v <sub>p</sub> - Flow rate<br>LOS - Level of service<br>DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fr |   | f <sub>p</sub> - Page 23-   | 23-8, 23-10, 23-1  |   | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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|  | BASIC F   | REEWAY SE                          | GMENTS WC  | RKSHEET  |   |  |
|--|---|------------------------------------|--|--|---|--|
| S0   Froe-Flow Speed   FFS = 75 mith   70 mi | B. C.   | 1450 (600 1750 1750 1600 2000 2000 | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AADT FFS, LOS, N | Output<br>LOS, S, D<br>N, S, D<br>v <sub>p</sub> , S, D<br>LOS, S, D<br>N, S, D<br>v <sub>p</sub> , S, D |
| General Information  | Flow Rate (pc/h/l   | ln)                                | Sito Inform  | ation  |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/14/12<br>AM                                  |                                    | Site Information Highway/Direct From/To Jurisdiction Analysis Year                         |  | Southbound I-87<br>Exit 5 to Exit 4<br>NYSDOT<br>2026 Flyover   |  |
| ✓ Oper.(LOS)   |   | П                                  | Des.(N)  |  | ☐ Planning Da   | ta   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment   | 5600  | veh/h<br>veh/day<br>veh/h          | Peak-Hour Fac<br>%Trucks and E<br>%RVs, P <sub>R</sub><br>General Terrai<br>Grade %<br>U   | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi   |  |
| Calculate Flow Adjustn   | nents   |                                    |  |  |   |  |
| f <sub>p</sub>   | 1.00  |                                    | E <sub>R</sub>   |  | 1.2   |  |
| E <sub>T</sub>   | 1.5   |                                    | $f_{HV} = 1/[1+P_T(E_T - E_T)]$  |  | 0.990   |  |
| Speed Inputs   | 10.0  |                                    | Calc Speed   | Adj and FFS  | <u> </u>  |  |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>3<br>56.0                              | ft<br>ft<br>I/mi<br>mi/h           | f <sub>LW</sub><br>f <sub>LC</sub><br>f <sub>ID</sub><br>f <sub>N</sub>                    |  |   | mi/h<br>mi/h<br>mi/h<br>mi/h   |
| Base free-flow Speed, BFFS   |   | mi/h                               | FFS  |  | 56.0  | mi/h   |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ )  S $D = v_p / S$ LOS   |   | pc/h/ln<br>mi/h<br>pc/mi/ln        | $f_p$ )<br>S<br>D = $v_p$ / S  | IV) / (PHF x N x<br>ber of Lanes, N  | f <sub>HV</sub> x   | pc/h<br>mi/h<br>pc/mi/ln   |
| Glossary   |   |                                    | Factor Loca  |  |   |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base four volume |                                    | E <sub>R</sub> - Exhibits23<br>E <sub>T</sub> - Exhibits 23<br>f <sub>p</sub> - Page 23-12 | 3-8, 23-10<br>3-8, 23-10, 23-1   | 1 f <sub>LC</sub> - Ex<br>f <sub>N</sub> - Exl  | xhibit 23-4<br>xhibit 23-5<br>nibit 23-6<br>hibit 23-7   |
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|   | BASIC F                          | REEWAY SE                   | GMENTS W   | VORKSHEET  |   |  |
|---|----------------------------------|-----------------------------|--|--|---|--|
| Free-Flow Speed   FFS = 75 mith   70 mith | B C C                            | 150<br>(600<br>1750<br>0    |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AADT FFS, LOS, N | Output LOS, S, D N, S, D V <sub>p</sub> , S, D LOS, S, D N, S, D V <sub>p</sub> , S, D |
| 0 400 800   | 1200<br>Flow Rate (pc/h/ln)      | 1600 2000<br>)              | 2400   |  |   |  |
| General Information   |                                  |                             | Site Infori  | mation   |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4  | CLD<br>CHA<br>07/30/13<br>AM     |                             | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea            | ection of Travel   | Northbound I-8<br>Exit 5 to Exit 6<br>NYSDOT<br>2026 Flyover  | 7  |
| ✓ Oper.(LOS)  |                                  |                             | Des.(N)  |  | ☐ Planning I  | Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K   | 2600                             | veh/h<br>veh/day            | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub>                 | •  | 0.92<br>2<br>0  |  |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjustr   | 1.00<br>nents                    | veh/h                       | General Terr<br>Grade %  | rain:<br>Length<br>Up/Down %   | Level<br>mi   |  |
| f <sub>p</sub>  | 1.00                             |                             | E <sub>R</sub>   |  | 1.2   |  |
| E <sub>T</sub>  | 1.5                              |                             |  | E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990   |  |
| Speed Inputs  |                                  |                             |  | ed Adj and FFS   |   |  |
| Lane Width<br>Rt-Shoulder Lat. Clearance<br>Interchange Density<br>Number of Lanes, N<br>FFS (measured)   | 12.0<br>6.0<br>0.50<br>4<br>56.0 | ft<br>ft<br>I/mi<br>mi/h    | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS |  | 56.0  | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h   |
| Base free-flow Speed, BFFS  |                                  | mi/h                        |  |  | 30.0  | 1111/11  |
| LOS and Performance  Operational (LOS) $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_p)$ S $D = V_p / S$ LOS  |                                  | pc/h/ln<br>mi/h<br>pc/mi/ln | $f_p$ )<br>S<br>D = $v_p$ / S                                      | DHV) / (PHF x N x  | f <sub>HV</sub> x   | pc/h<br>mi/h<br>pc/mi/ln   |
|   |                                  |                             |  | imber of Lanes, N  |   |  |
| Glossary  N - Number of lanes  V - Hourly volume  v <sub>p</sub> - Flow rate  LOS - Level of service  DDHV - Directional design ho  Copyright © 2007 University of Florida,   |                                  |                             | f <sub>p</sub> - Page 23-<br>LOS, S, FFS                           | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1 f <sub>LC</sub> - f <sub>N</sub> - E<br>2, 23-3 f <sub>ID</sub> - I                                     | Exhibit 23-4 Exhibit 23-5 Exhibit 23-6 Exhibit 23-7  8/12/2013 3:24 F                  |

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|   | BASIC F                                  | REEWAY SE              | GMENTS W  | ORKSHEET   |   |   |
|---|--|------------------------|---|--|---|---|
| _ 00  |  |                        |   |  |   |   |
| Froe-Flow Speed   FFS = 75 mith   70 mith | B, C                                     | 450<br>(600<br>1750    |   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | FFS, N, V <sub>p</sub><br>FFS, LOS, V<br>FFS, LOS, V<br>FFS, N, AA<br>FFS, LOS, V | √ v <sub>p</sub> , S, D<br>DT LOS, S, D<br>AADT N, S, D |
| 0 400 200   | ) 1200<br>Flow Rate (pc/h/lin            | 1600 200 <b>0</b><br>) | 2400  |  |   |   |
| General Information   | 1945/1944/1945/1945/1945/1945/1945/1945/ | 7.5                    | Site Inform   | nation   |   |   |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period  | CLD<br>CHA<br>07/30/13<br>AM             |                        | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Year                | ction of Travel  | Southbound<br>Exit 6 to Ex<br>NYSDOT<br>2026 Flyov                                | it 5  |
| Project Description Exit 4  |  |                        | ,   |  |   |   |
| Oper.(LOS)  |  |                        | Des.(N)   |  | ☐ Planni  | ng Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K   | 6100                                     | veh/h<br>veh/day       | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub>                     | Buses, P <sub>T</sub>  | 0.92<br>2<br>0  |   |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjustr   | 1.00                                     | veh/h                  | General Terra<br>Grade %  | ain:<br>Length<br>Up/Down %  | Level<br>mi   |   |
| <u> </u>  | 1.00                                     |                        | E <sub>R</sub>  |  | 1.2   |   |
| f <sub>p</sub><br> E <sub>⊤</sub>   | 1.5                                      |                        |   | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990   |   |
| Speed Inputs  | 7.0                                      |                        |   | d Adj and FFS  |   |   |
| Lane Width  | 12.0                                     | ft                     |   | a Aaj ana 110  | <u> </u>  | mi/h  |
| Rt-Shoulder Lat. Clearance  | 6.0                                      | ft                     | f <sub>LW</sub>   |  |   |   |
| Interchange Density   | 0.50                                     | I/mi                   | f <sub>LC</sub>   |  |   | mi/h  |
| Number of Lanes, N  | 4  |                        | f <sub>ID</sub>   |  |   | mi/h  |
| FFS (measured)  | 56.0                                     | mi/h                   | $f_N$   |  |   | mi/h  |
| Base free-flow Speed, BFFS  |  | mi/h                   | FFS   |  | 56.0  | mi/h  |
| LOS and Performance   | Measures                                 |                        | Design (N)  |  |   |   |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N :<br>f_)   | x f <sub>HV</sub> x<br>1674              | pc/h/ln                | $\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DD})$ | 9HV) / (PHF x N x t  | f <sub>HV</sub> x   | pc/h  |
| $S$ $D = v_p / S$   | 56.0<br>29.9                             | mi/h<br>pc/mi/ln       | f <sub>p</sub> )<br>S<br>D = v <sub>p</sub> / S                         |  |   | mi/h<br>pc/mi/ln  |
| LOS   | D  |                        |   | mber of Lanes, N   |   | ·   |
| Glossary  |  |                        | Factor Loc  |  |   |   |
| N - Number of lanes   | S - Speed                                |                        | E <sub>R</sub> - Exhibits2  | 23-8 23-10   | f   | <sub>.W</sub> - Exhibit 23-4                            |
| V - Hourly volume   | D - Density                              |                        |   | 23-6, 23-10<br>23-8, 23-10, 23-11  | <del>-</del>  | <sub>.W</sub> - Exhibit 23-4                            |
| v <sub>p</sub> - Flow rate  | FFS - Free-flow                          | speed                  | f <sub>p</sub> - Page 23-   |  | -   | <sub>.C</sub> - Exhibit 23-5                            |
| LOS - Level of service  | BFFS - Base fr                           | ee-flow speed          |   | ız<br>, v <sub>p</sub> - Exhibits 23-2   |   | <sub>D</sub> - Exhibit 23-7                             |
| DDHV - Directional design ho  | our volume                               |                        | , 0, 113,   | , <sub>p</sub> =   | ., 20 0 I <sub>I</sub>  | D EXHIBIT 20-7  |
| Copyright © 2007 University of Florida,   | All Rights Reserved                      |                        | HCS+TM  | Version 5.3  | Gener   | ated: 8/12/2013 3:25 PI                                 |

| _   |                            | MPS AND                                 | RAMP JUNG           |   |                                     | <u>:EI</u>          |                   |                                      |  |                                  |
|---|----------------------------|---|---------------------|---|-------------------------------------|---------------------|-------------------|--------------------------------------|--|----------------------------------|
| General Infol   | mation                     |   |                     | Site Infor  | mation                              |                     |                   |                                      |  |                                  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 02/14                      |   | Jui<br>Jui          | eeway/Dir of Tranction<br>risdiction<br>alysis Year |                                     |                     |                   | p                                    |  |                                  |
|   | Exit 4                     |   | All                 | alysis i cai  | •                                   | 20201               | iyovei            |                                      |  |                                  |
| nputs   | LAIL 4                     |   |                     |   |                                     |                     |                   |                                      |  |                                  |
| Jpstream Adj Ramp   |                            | Terrain: Level                          |                     |   |                                     |                     |                   |                                      | Downstrea  | ım Adi                           |
| Yes O   |                            |   |                     |   |                                     |                     |                   |                                      | Ramp   | -                                |
| No  ✓ Ot  | f                          |   |                     |   |                                     |                     |                   |                                      | ☐ Yes<br>☑ No                                    | ☐ On<br>☐ Off                    |
| - 1100  | f4                         |   |                     |   |                                     |                     |                   |                                      | L <sub>down</sub> =                              | ft                               |
| $t_{up} = 1100$ $t_{u} = 670 \text{ V}$                               |                            | S                                       | FF = 56.0 mph       | show lanes, L <sub>A</sub> ,                        | S <sub>FR</sub> = 4                 | 0.0 mp              | h                 |                                      | V <sub>D</sub> =                                 | veh/h                            |
| Conversion t  | o nc/h Un/                 | der Rase (                              |                     | now lanes, L <sub>A</sub> ,                         | D' R' f                             |                     |                   |                                      |  |                                  |
|   | <i>0 pc/11 011</i> 0       |   |                     |   | Ī                                   | 1                   | ,                 | ,                                    | \//5!!5  |                                  |
| (pc/h)  | (Veh/hr)                   | PHF                                     | Terrain             | %Truck  | %Rv                                 | 1                   | f <sub>HV</sub>   | f <sub>p</sub>                       | v = V/PHF  | хт <sub>НV</sub> хт <sub>р</sub> |
| Freeway   | 2950                       | 0.92                                    | Level               | 2   | 0                                   | 0.9                 | 990               | 1.00                                 | 3:   | 239                              |
| Ramp  | 400                        | 0.92                                    | Level               | 2   | 0                                   | 0.9                 | 990               | 1.00                                 | <del>                                     </del> | 39                               |
| UpStream  | 670                        | 0.92                                    | Level               | 2   | 0                                   | 0.9                 | 990               | 1.00                                 | 7  | 36                               |
| DownStream  |                            | Merge Areas                             |                     |   |                                     |                     |                   | Diverge Areas                        |  |                                  |
| stimation of v <sub>12</sub>  |                            |   |                     |   | Estimati                            | ion o               |                   | Diverge Areas                        | <u> </u>   |                                  |
|   |                            | (D.)                                    |                     |   | 20077740                            |                     | 12                |                                      |  |                                  |
|   | $V_{12} = V_F$             | • |                     |   |                                     |                     | V <sub>12</sub> = | V <sub>R</sub> + (V <sub>F</sub> - V | / <sub>R</sub> )P <sub>FD</sub>                  |                                  |
| EQ =  |                            | (Equation 2                             |                     |   | L <sub>EQ</sub> =                   |                     |                   | (Equation 2                          | 5-8 or 25-9)                                     | )                                |
| P <sub>FM</sub> =   | 0.601                      | using Equati                            | on (Exhibit 25-5)   |   | P <sub>FD</sub> =                   |                     |                   | using Equat                          | ion (Exhibit 2                                   | 25-12)                           |
| 12 =  | 1948                       |   |                     |   | V <sub>12</sub> =                   |                     |                   | pc/h                                 |  |                                  |
| ' <sub>3</sub> or V <sub>av34</sub>                                   |                            | pc/h (Equatio                           | n 25-4 or 25-       |   | V <sub>3</sub> or V <sub>av34</sub> |                     |                   | pc/h (Equation                       | 1 25-15 or 25-                                   | 16)                              |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,70                          | 5)<br>00 nc/h? □ ∨o.       | o V No                                  |                     |   |                                     | <sub>34</sub> > 2,7 | '00 pc/h?         | □ Yes □ N                            | 0  |                                  |
| s $V_3$ or $V_{av34} > 2,7$   |                            |   |                     |   |                                     |                     |                   | □ Yes □ N                            |  |                                  |
| $^{4}$ Yes, $V_{12a} =$   |                            | Equation 25                             | _Q\                 |   | If Yes,V <sub>12a</sub> =           |                     | 12                | pc/h (Equati                         |  |                                  |
| Capacity Che  | •                          | (Lqualion 23                            | -0)                 |   | Capacity                            |                     | ooks              |                                      | ,  |                                  |
| Sapacity Crie   | Actual                     |   | apacity             | LOS F?  | Capacity                            | y CII               | Actual            |                                      | anacity  | LOS F                            |
|   | Actual                     |   | ірасіту             | LUSF!   | V <sub>F</sub>                      | $\dashv$            | Actual            | Exhibit 25                           | apacity  | LUST                             |
| V   | 2/70                       | E 177.05.7                              |                     |   |                                     | 1/                  |                   |                                      | _  | +                                |
| $V_{FO}$  | 3678                       | Exhibit 25-7                            |                     | No  | $V_{FO} = V_{F}$                    | - v <sub>R</sub>    |                   | Exhibit 25                           |  |                                  |
|   |                            |   |                     | <u> </u>  | V <sub>R</sub>                      |                     |                   | Exhibit 25                           |  |                                  |
| low Enterin   |                            | T                                       |                     |   | Flow En                             |                     |                   | erge Influe                          |  |                                  |
|   | Actual                     |   | Desirable           | Violation?  | \ , .                               | A                   | ctual             | Max Des                              | sirable  | Violation?                       |
| V <sub>R12</sub>  | 2387                       | Exhibit 25-7                            | 4600:All            | No  | V <sub>12</sub>                     | <u>Ļ</u>            |                   | Exhibit 25-14                        |  | . =\                             |
| evel of Serv  |                            |   |                     |   | 1                                   |                     |                   | eterminati                           |  | t <i>F)</i>                      |
|   | 0.00734 v <sub>R</sub> + 0 | 0.0078 V <sub>12</sub> - 0.0            | 0627 L <sub>A</sub> |   |                                     | $D_R = 4$           | 1.252 + (         | 0.0086 V <sub>12</sub> -             | 0.009 L <sub>D</sub>                             |                                  |
| $O_{R} = 18.6 \text{ (pc)}$   | c/mi/ln)                   |   |                     |   | $D_R = (p)$                         | c/mi/l              | n)                |                                      |  |                                  |
| •   | bit 25-4)                  |   |                     |   |                                     |                     | 25-4)             |                                      |  |                                  |
| Speed Deteri  | mination                   |   |                     |   | Speed D                             | Deter               | minati            | on                                   |  |                                  |
| N <sub>S</sub> = 0.295 (Ex  | ibit 25-19)                |   |                     |   | $D_s = (E)$                         | xhibit 2            |                   |                                      |  |                                  |
| •   | (Exhibit 25-19)            |   |                     |   |                                     | ph (Exh             | nibit 25-19       | )                                    |  |                                  |
|   | (Exhibit 25-19)            |   |                     |   | .,                                  |                     | nibit 25-19       |                                      |  |                                  |
|   |                            |   |                     |   | I -                                 |                     | nibit 25-15       |                                      |  |                                  |
| 5 = 52.3 mph  | (EXPIDIT 25-14)            |   |                     |   | D = 1111                            | יא זון ווע          | IIDIL ZU-TU       | )                                    |  |                                  |

|  |   | RAMPS              | S AND RAM                | P JUNCTI  | ONS WO   | RKS              | HEET                  |  |                               |                                    |  |
|--|---|--------------------|--------------------------|---|--|------------------|-----------------------|--|-------------------------------|------------------------------------|--|
| General Info   | rmation                                   |                    |                          | Site Infor  |  |                  |                       |  |                               |                                    |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio<br>Project Description | SEB<br>/ CHA<br>02/1 <sup>4</sup><br>d AM |                    | Ju<br>Ju                 | eeway/Dir of Tr<br>Inction<br>Irisdiction<br>nalysis Year | avel   |                  |                       | SR                                     |                               |                                    |  |
| Inputs   | LAIL 4                                    |                    |                          |   |  |                  |                       |  |                               |                                    |  |
| Upstream Adj Ramp  | )   | Terrain: Level     |                          |   |  |                  |                       |  | Downstrea<br>Ramp             | m Adj                              |  |
| □ Yes □ O  | n   |                    |                          |   |  |                  |                       |  | ✓ Yes                         | □ On                               |  |
| ™ No □ O   | ff  |                    |                          |   |  |                  |                       |  | □ No                          | ✓ Off                              |  |
| L <sub>up</sub> = ft   |   | 9                  | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4                            | 10 0 mi          | nh                    |  | L <sub>down</sub> =           | 2600 ft                            |  |
| V <sub>u</sub> = veh/l   |   |                    | Sketch (                 | show lanes, L <sub>A</sub> ,                              |  | 10.0 111         | JII                   |  | V <sub>D</sub> =              | 190 veh/h                          |  |
| Conversion   |   | der Base (         | Conditions               | 1   | Υ  |                  |                       | Υ                                      | 1                             |                                    |  |
| (pc/h)   | V<br>(Veh/hr)                             | PHF                | Terrain                  | %Truck  | %Rv  |                  | $\boldsymbol{f}_{HV}$ | f <sub>p</sub>                         | v = V/PHF                     | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 3350                                      | 0.92               | Level                    | 2   | 0  | 0                | .990                  | 1.00                                   | 36                            | 78                                 |  |
| Ramp   | 910                                       | 0.82               | Level                    | 2   | 0  | 0                | .990                  | 1.00                                   | 11:                           | 21                                 |  |
| UpStream<br>DownStream   | 190                                       | 0.82               | Lovel                    | 2   | 0  | +                | 000                   | 1.00                                   | 22                            |                                    |  |
| Downstieam   |   | Merge Areas        | Level                    | 2   | U  | 0                | .990                  | 1.00<br>Diverge Areas                  | 23                            | 14                                 |  |
| Estimation of v <sub>12</sub>  |   |                    |                          |   | Estimat  | ion d            |                       | 2.10.go7.10do                          |                               |                                    |  |
|  | V <sub>12</sub> = V <sub>F</sub>          | (P <sub>FM</sub> ) |                          |   |  |                  | V <sub>12</sub> =     | = V <sub>R</sub> + (V <sub>F</sub> - V | <sub>R</sub> )P <sub>ED</sub> |                                    |  |
| L <sub>EQ</sub> =  |   | L <sub>EQ</sub> =  |                          | 3   | 78.49 (Equation                                | on 25-8 or 2     | 25-9)                 |  |                               |                                    |  |
| P <sub>FM</sub> =  | using                                     | Equation (E        | xhibit 25-5)             |   | P <sub>FD</sub> =                              |                  | 0                     | .616 using Ed                          | quation (Exh                  | ibit 25-12)                        |  |
| V <sub>12</sub> =  | pc/h                                      |                    |                          |   | V <sub>12</sub> =                              |                  | 2                     | 697 pc/h                               |                               |                                    |  |
| V <sub>3</sub> or V <sub>av34</sub>  |   | (Equation 25       | -4 or 25-5)              |   | $V_3$ or $V_{av34}$                            |                  | 9                     | 81 pc/h (Equa                          | ation 25-15                   | or 25-16)                          |  |
| Is $V_3$ or $V_{av34} > 2.7$   |   |                    |                          |   |  |                  |                       | TYes  ✓ No                             |                               |                                    |  |
| Is $V_3$ or $V_{av34} > 1.5$   | · <del>-</del>                            |                    |                          |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No |                  |                       |  |                               |                                    |  |
| 120  |   | (Equation 25       | -8)                      |   | If Yes,V <sub>12a</sub> =                      |                  |                       | oc/h (Equation                         | 1 25-18)                      |                                    |  |
| Capacity Ch  |   |                    |                          |   | Capacit  |                  |                       |  |                               | _                                  |  |
|  | Actual                                    | Ca                 | apacity                  | LOS F?  | 1  |                  | Actual                |  | pacity                        | LOS F?                             |  |
| , ,  |   |                    |                          |   | V <sub>F</sub>                                 | ١,,              | 3678                  | Exhibit 25-1                           | +                             | No                                 |  |
| V <sub>FO</sub>  |   | Exhibit 25-7       |                          |   | $V_{FO} = V_{F}$                               | - V <sub>R</sub> | 2557                  | Exhibit 25-1                           |                               | No                                 |  |
|  | <u> </u>                                  |                    |                          |   | V <sub>R</sub>                                 |                  | 1121                  | Exhibit 25-                            | ļ                             | No                                 |  |
| Flow Enterin   |   | 1                  |                          | \/iolotion?   | Flow En  | -1               |                       | rge Influer                            |                               | Violation                          |  |
| V <sub>R12</sub>   | Actual                                    | Exhibit 25-7       | Desirable                | Violation?  | V <sub>12</sub>                                | $\neg$           | Actual<br>2697        | Max Desira<br>Exhibit 25-14            | 4400:All                      | Violation?                         |  |
| Level of Serv  | l<br>vice Detern                          |                    | f not F)                 | <u> </u>  |  |                  |                       | eterminatio                            |                               |                                    |  |
| $D_R = 5.475 + 0$  |   | •                  |                          |   |  |                  |                       | .0086 V <sub>12</sub> - 0              | •                             | ,                                  |  |
| $D_R = 0.076$  |   | 12                 | <b>-</b> A               |   |  |                  | :/mi/ln)              | 12                                     |                               |                                    |  |
|  | oit 25-4)                                 |                    |                          |   |  |                  | bit 25-4)             |  |                               |                                    |  |
| Speed Deter  |   |                    |                          |   | Speed L  | •                |                       | on                                     |                               |                                    |  |
| $M_S = $ (Exibit 2   |   |                    |                          |   |  |                  | xhibit 25             |  |                               |                                    |  |
| -  | nibit 25-19)                              |                    |                          |   | 1  |                  | n (Exhibit            |  |                               |                                    |  |
|  | nibit 25-19)                              |                    |                          |   | 1  | -                | n (Exhibit            |  |                               |                                    |  |
|  | nibit 25-14)                              |                    |                          |   | 1 -  | -                | n (Exhibit            |  |                               |                                    |  |
|  |   | . 02               | _ ····[21                | \   | /  |                  |                       |  |                               |                                    |  |

|  |                                  | RAMP               | S AND RAM                | MP JUNCTI  | ONS WO  | RKS              | HEET               |   |                     |             |  |
|--|----------------------------------|--------------------|--------------------------|--|---|------------------|--------------------|---|---------------------|-------------|--|
| General Infor  | mation                           |                    |                          | Site Infor   |   |                  |                    |   |                     |             |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioc | SEB<br>CHA<br>02/14<br>I AM      |                    |                          | Freeway/Dir of Tr<br>Junction<br>Jurisdiction<br>Analysis Year | Travel Northbound I-87 Exit 4 NB Off to Wolf NYSDOT 2026 Flyover      |                  |                    |   |                     |             |  |
| Project Description  | Exit 4                           |                    |                          |  |   |                  |                    |   |                     |             |  |
| Inputs   |                                  | Terrain: Leve      | 1                        |  |   |                  |                    | 1   | <u> </u>            | A 1:        |  |
| Upstream Adj Ramp  |                                  | Torium. Love       | •                        |  |   |                  |                    |   | Downstrea<br>Ramp   | m Aaj       |  |
| Yes Or   | 1                                |                    |                          |  |   |                  |                    |   | ☐ Yes               | □ On        |  |
| □ No    Of   | f                                |                    |                          |  |   |                  |                    |   | ✓ No                | Off         |  |
|  |                                  |                    |                          |  |   |                  |                    |   |                     |             |  |
| L <sub>up</sub> = 2600   | ft                               |                    | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 40  | Λ Λ mr           | \h                 |   | L <sub>down</sub> = | ft          |  |
| V <sub>u</sub> = 910 ve  | eh/h                             |                    | • •                      | ( show lanes, L <sub>A</sub> ,                                 |   | o.o m            | ,,,,               |   | V <sub>D</sub> =    | veh/h       |  |
| Conversion to  | o nc/h Uni                       | l<br>der Base (    |                          |  | D' R' f   |                  |                    |   |                     |             |  |
| (pc/h)   | V                                | PHF                | Terrain                  | %Truck   | %Rv   |                  | f                  | f   | v = V/PHF           | vf vf       |  |
| * '  | (Veh/hr)                         |                    |                          |  | <b>_</b>  | _                | f <sub>HV</sub>    |   |                     | г           |  |
| Freeway  | 2400                             | 0.92               | Level                    | 2  | 0   | +                | 990                | 1.00  | 26                  |             |  |
| Ramp<br>UpStream   | 190<br>910                       | 0.82               | Level<br>Level           | 2 2  | 0   | ┿                | .990<br>.990       | 1.00<br>1.00  | 23<br>11:           |             |  |
| DownStream   | 710                              | 0.02               | Level                    | 2  | 0   | 1 0              | .770               | 1.00  | 11.                 | 2 1         |  |
|  |                                  | Merge Areas        |                          |  |   |                  |                    | Diverge Areas                                       |                     |             |  |
| Estimation of  | <sup>f</sup> v <sub>12</sub>     |                    |                          |  | Estimati  | on c             | of v <sub>12</sub> |   |                     |             |  |
|  | V <sub>12</sub> = V <sub>F</sub> | (P <sub>FM</sub> ) |                          |  |   |                  | V <sub>12</sub> =  | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | R)P <sub>FD</sub>   |             |  |
| L <sub>EQ</sub> =  | (Equ                             | ation 25-2 or      | 25-3)                    |  | L <sub>EQ</sub> =   |                  | (                  | Equation 25-8                                       | or 25-9)            |             |  |
| P <sub>FM</sub> =  | using                            | Equation (E        | Exhibit 25-5)            |  | P <sub>FD</sub> =   |                  | 0                  | .683 using Eq                                       | uation (Exh         | ibit 25-12) |  |
| V <sub>12</sub> =  | pc/h                             |                    |                          |  | V <sub>12</sub> =   |                  | 1                  | 875 <b>pc/h</b>                                     |                     |             |  |
| V <sub>3</sub> or V <sub>av34</sub>                                    |                                  | (Equation 25       | -4 or 25-5)              |  | $V_3$ or $V_{av34}$   |                  |                    | 60 pc/h (Equa                                       | tion 25-15          | or 25-16)   |  |
| Is $V_3$ or $V_{av34} > 2,70$  |                                  |                    |                          |  | Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No       |                  |                    |   |                     |             |  |
| Is $V_3$ or $V_{av34} > 1.5$   | · <del>-</del>                   |                    |                          |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes  No                       |                  |                    |   |                     |             |  |
| If Yes,V <sub>12a</sub> =  |                                  | (Equation 25       | 5-8)                     |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)                       |                  |                    |   |                     |             |  |
| Capacity Che   |                                  | •                  |                          | 1  | Capacity  | y Ch             |                    |   |                     |             |  |
|  | Actual                           | C                  | apacity                  | LOS F?   | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \                                 |                  | Actual             | <u> </u>  | oacity              | LOS F       |  |
| .,   |                                  | l l                |                          |  | V <sub>F</sub>  |                  | 2635               | Exhibit 25-1  | _                   | No          |  |
| V <sub>FO</sub>  |                                  | Exhibit 25-7       |                          |  | $V_{FO} = V_{F}$  | - V <sub>R</sub> | 2401               | Exhibit 25-1  | _                   | No          |  |
|  | <u>L</u>                         |                    |                          |  | V <sub>R</sub>  |                  | 234                | Exhibit 25-3  |                     | No          |  |
| Flow Entering  |                                  | 1                  |                          | Violotion  | Flow En   | _                |                    | rge Influen   |                     | Violetia    |  |
| V <sub>R12</sub>   | Actual                           | Exhibit 25-7       | Desirable                | Violation?   | V <sub>12</sub>   | 1                | Actual<br>1875     | Max Desirab<br>Exhibit 25-14                        | 4400:All            | Violation?  |  |
| Level of Serv  | ice Deterr                       |                    | if not F)                | 1  |   |                  |                    | eterminatio   |                     |             |  |
| $D_R = 5.475 + 0.$   |                                  |                    |                          |  |   |                  |                    | .0086 V <sub>12</sub> - 0.                          | •                   | ,           |  |
| $D_R = 0.470 \cdot 0.1$  | •••                              | 12                 | A                        |  |   |                  | /202               | 12 0.   | <del>-</del> D      |             |  |
| LOS = (Exhibi  | ,                                |                    |                          |  | 1   |                  | bit 25-4)          |   |                     |             |  |
| Speed Deterr   |                                  |                    |                          |  | Speed D   | `                |                    | on  |                     |             |  |
|  |                                  |                    |                          |  | <del></del>   |                  |                    |   |                     |             |  |
| $M_S = (Exibit 28)$ $S_{-} = mnh (Exh)$                                | ibit 25-19)                      |                    |                          |  | $D_{S} = 0.384$ (Exhibit 25-19)<br>$S_{R} = 50.6$ mph (Exhibit 25-19) |                  |                    |   |                     |             |  |
|  | iibit 25-19)<br>iibit 25-19)     |                    |                          |  | $S_0$ = 61.4 mph (Exhibit 25-19)                                      |                  |                    |   |                     |             |  |
|  | いいに とい ・ (ガ)                     |                    |                          |  | . U 01.   | pi               | . ,=               | ,   |                     |             |  |
|  | ibit 25-14)                      |                    |                          |  |   | 3 mnh            | ı (Exhibit         | 25-15)  |                     |             |  |

|  |                                      | NAIVIE                 | S AND RAM     |  |   |                           |                       |  |               |                                    |
|--|--------------------------------------|------------------------|---------------|--|---|---------------------------|-----------------------|--|---------------|------------------------------------|
| General Inf  |                                      |                        |               | Site Infor                                 |   |                           |                       |  |               |                                    |
| Analyst<br>Agency or Compa<br>Date Performed<br>Analysis Time Pe | 02/1                                 | 1                      | Ji<br>Ji      | reeway/Dir of Tr<br>unction<br>urisdiction |   | Southb<br>Exit 2V<br>NYSD | V Off<br>TC           |  |               |                                    |
| Project Description  |                                      |                        | A             | nalysis Year                               | •   | 2020 F                    | lyover                |  |               |                                    |
| Inputs   | JII LAIL 4                           |                        |               |  |   |                           |                       |  |               |                                    |
| Upstream Adj Ra  | mn                                   | Terrain: Leve          |               |  |   |                           |                       |  | Downstrea     | m Adi                              |
| •  | On                                   |                        |               |  |   |                           |                       |  | Ramp          |                                    |
| ✓ No   | Off                                  |                        |               |  |   |                           |                       |  | ✓ Yes<br>✓ No | ✓ On<br>Off                        |
| L <sub>up</sub> = ft   |                                      |                        |               |  |   |                           |                       |  |               | 1300 ft                            |
| ир   | h/h                                  | S                      | FF = 56.0 mph | show lanes, L <sub>A</sub> ,               | $S_{FR} = 4$                                    | 0.0 m                     | oh                    |  |               | 350 veh/                           |
| Conversion   | n to pc/h Un                         | der Base (             |               | -Д   | -D' - R' - 1'                                   |                           |                       |  |               |                                    |
| (pc/h)   | V<br>(Veh/hr)                        | PHF                    | Terrain       | %Truck                                     | %Rv   |                           | f <sub>HV</sub>       | f <sub>p</sub>                         | v = V/PHF     | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 5400                                 | 0.92                   | Level         | 2  | 0   | 0                         | .990                  | 1.00                                   | 592           | 28                                 |
| Ramp   | 760                                  | 0.92                   | Level         | 2  | 0   | 0                         | .990                  | 1.00                                   | 83            | 4                                  |
| UpStream<br>DownStream   | 350                                  | 0.92                   | Level         | 2  | 0   | 1                         | .990                  | 1.00                                   | 38            | 1                                  |
| Downsticani  |                                      | Merge Areas            | FEAGI         |  | 0   |                           |                       | Diverge Areas                          |               | 4                                  |
| Estimation   |                                      | Estimati               | ion d         |  |   |                           |                       |  |               |                                    |
|  | V <sub>12</sub> = V <sub>F</sub>     | (P <sub>EM</sub> )     |               |  |   |                           |                       | = V <sub>R</sub> + (V <sub>F</sub> - V | P)PED         |                                    |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                        |                                      |                        |               |  | L <sub>EQ</sub> =                               |                           |                       | Equation 25-8                          |               |                                    |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)                  |                                      |                        |               |  | P <sub>FD</sub> =                               |                           | 0                     | .573 using Ed                          | uation (Exhi  | bit 25-12)                         |
| V <sub>12</sub> =  | pc/h                                 |                        |               |  | V <sub>12</sub> =                               |                           | 3                     | 755 <b>pc/h</b>                        |               |                                    |
| $V_{3}$ or $V_{av34}$  |                                      | (Equation 25           | -4 or 25-5)   |  | $V_3$ or $V_{av34}$                             |                           |                       | 173 pc/h (Equ                          | ation 25-15   | or 25-16                           |
| 0 4101   | 2,700 pc/h? ☐ Ye                     |                        |               |  |   |                           |                       | TYes  ✓ No                             |               |                                    |
|  | 1.5 * V <sub>12</sub> /2             |                        |               |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No  |                           |                       |  |               |                                    |
| If Yes,V <sub>12a</sub> =  |                                      | (Equation 25           | 5-8)          |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |                           |                       |  |               |                                    |
| Capacity C   | hecks                                |                        |               |  | Capacity  | y Ch                      | ecks                  |  |               |                                    |
|  | Actual                               | С                      | apacity       | LOS F?                                     | 1   |                           | Actual                |  | pacity        | LOS F                              |
|  |                                      |                        |               |  | V <sub>F</sub>                                  |                           | 5928                  | Exhibit 25-1                           |               | No                                 |
| $V_{FO}$   |                                      | Exhibit 25-7           |               |  | $V_{FO} = V_{F}$                                | - V <sub>R</sub>          | 5094                  | Exhibit 25-1                           | <del>-</del>  | No                                 |
|  |                                      |                        |               |  | V <sub>R</sub>                                  |                           | 834                   | Exhibit 25-3                           |               | No                                 |
| Flow Enter   | ing Merge Ir                         |                        |               | 1 10 1 11 -                                | Flow En   | 1                         |                       | rge Influen                            |               |                                    |
| \/   | Actual                               | +                      | Desirable     | Violation?                                 | \/  | _                         | Actual                | Max Desiral                            |               | Violation                          |
| V <sub>R12</sub>   | rvice Deteri                         | Exhibit 25-7           | if not E)     | <u> </u>                                   | V <sub>12</sub>                                 |                           | 3755                  | Exhibit 25-14                          | 4400:All      | No                                 |
|  | - 0.00734 v <sub>R</sub> +           |                        |               |  |   |                           |                       | eterminatio                            | _             | )                                  |
|  | - 0.00734 V <sub>R</sub> +<br>mi/ln) | 0.0070 V <sub>12</sub> | 0.00021 LA    |  |   | • •                       | 4.252 + 0<br>:/mi/ln) | 0.0086 V <sub>12</sub> - 0.            | oo₃ ∟D        |                                    |
| 1.5.5  | nibit 25-4)                          |                        |               |  |   |                           | bit 25-4)             |  |               |                                    |
| Speed Dete   |                                      |                        |               |  | Speed D   | •                         |                       | on                                     |               |                                    |
|  | t 25-19)                             |                        |               |  | <del>` '</del>                                  |                           | xhibit 25             |  |               |                                    |
| · ·  | Exhibit 25-19)                       |                        |               |  |   | •                         | n (Exhibit            | *                                      |               |                                    |
|  | Exhibit 25-19)                       |                        |               |  | $S_0$ = 56.9 mph (Exhibit 25-19)                |                           |                       |  |               |                                    |
| 1  | Exhibit 25-14)                       |                        |               |  | 1.  | -                         | n (Exhibit            |  |               |                                    |
| Copyright © 2007 University of Florida, All Rights Reserved      |                                      |                        |               |  | 1. 52   | <b>-</b> pı               | . \-~                 | ,                                      |               |                                    |

| 1  |                                  | RAMP                     | S AND RAM                   | IP JUNCTI   | ONS WO   | RKS                | HEET                                  |   |                     |                                    |
|--|----------------------------------|--------------------------|-----------------------------|---|--|--------------------|---------------------------------------|---|---------------------|------------------------------------|
| General Infor  | mation                           |                          |                             | Site Infor  |  |                    |                                       |   |                     |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | SEB<br>CHA<br>02/14<br>d AM      |                          | J                           | reeway/Dir of Tr<br>unction<br>urisdiction<br>Analysis Year | ravel S  | Exit 4 S<br>NYSD(  | oound I-87<br>SB Off<br>OT<br>Ilyover |   |                     |                                    |
| Project Description  | Exit 4                           |                          |                             |   |  |                    |                                       |   |                     |                                    |
| Inputs   |                                  | Terrain: Leve            |                             |   |  |                    |                                       |   |                     | Α Ι'                               |
| Upstream Adj Ramp  |                                  | Terrain. Leve            | •                           |   |  |                    |                                       |   | Downstrea<br>Ramp   | am Aaj                             |
|  |                                  |                          |                             |   |  |                    |                                       |   | ✓ Yes               | ☑ On                               |
| Mo □ Of  | ı                                |                          |                             |   |  |                    |                                       |   | □ No                | ☐ Off                              |
| L <sub>up</sub> = ft   |                                  |                          |                             |   |  |                    |                                       |   | L <sub>down</sub> = | 1585 ft                            |
| V <sub>u</sub> = veh/h   | 1                                | S                        | $_{FF}$ = 56.0 mph Sketch ( | ( show lanes, L <sub>A</sub>                                | $S_{FR} = 40$ $L_{D'}V_{R'}V_{f}$                | 0.0 mp             | oh                                    |   | V <sub>D</sub> =    | 650 veh/h                          |
| Conversion t   | o pc/h Und                       | der Base (               | Conditions                  |   |  |                    |                                       |   |                     |                                    |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                      | Terrain                     | %Truck  | %Rv  |                    | f <sub>HV</sub>                       | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 5600                             | 0.92                     | Level                       | 2   | 0  | 0                  | .990                                  | 1.00  | 61                  | 48                                 |
| Ramp   | 640                              | 0.92                     | Level                       | 2   | 0  | 0                  | .990                                  | 1.00  | 7(                  | 03                                 |
| UpStream<br>DownStream   | 650                              | 0.93                     | Lovel                       | 5   | 0  | 1                  | .976                                  | 1.00  | 7:                  | 16                                 |
| Downsteam  |                                  | Merge Areas              | Level                       | ) )   | 0  | 0                  |                                       | Diverge Areas                                       | 1                   | 10                                 |
| Estimation o   |                                  | Estimati                 | on c                        |   | 5.1. o. go 7 oa o                                |                    |                                       |   |                     |                                    |
|  | V <sub>12</sub> = V <sub>F</sub> | (P)                      |                             |   | <del>                                     </del> |                    |                                       | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | -)P                 |                                    |
| L <sub>EQ</sub> =  | 12 1                             | ation 25-2 or            | 25-3)                       |   | L <sub>FO</sub> =                                |                    |                                       | Equation 25-8                                       |                     |                                    |
| P <sub>FM</sub> =  |                                  | Equation (E              |                             |   | P <sub>FD</sub> =                                |                    |                                       | 574 using Eq  |                     | nihit 25-12)                       |
| V <sub>12</sub> =  | pc/h                             | _qaa(2                   |                             |   | V <sub>12</sub> =                                |                    |                                       | 828 pc/h  | dation (Exi         | 11011 25 12)                       |
| V <sub>3</sub> or V <sub>av34</sub>                                    | •                                | (Equation 25             | 5-4 or 25-5)                |   | V <sub>3</sub> or V <sub>av34</sub>              |                    |                                       | 320  pc/h (Equ                                      | ation 25-1          | 5 or 25-16                         |
| Is $V_3$ or $V_{av34} > 2,70$  |                                  |                          | /                           |   |  | , > 2,7            |                                       | Yes Mo  | u0                  | 0 0. 20 .0                         |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                           |                                  |                          |                             |   |  |                    |                                       | Yes ✓ No  |                     |                                    |
| If Yes,V <sub>12a</sub> =  | ·=                               | (Equation 25             | 5-8)                        |   | If Yes, $V_{12a}$ = pc/h (Equation 25-18)        |                    |                                       |   |                     |                                    |
| Capacity Che   |                                  |                          |                             |   | Capacity   |                    | ecks                                  |   |                     |                                    |
|  | Actual                           | С                        | apacity                     | LOS F?  |  |                    | Actual                                | Ca  | pacity              | LOS F                              |
|  |                                  |                          |                             |   | $V_{F}$  |                    | 6148                                  | Exhibit 25-1  | 4 6780              | No                                 |
| $V_{FO}$   |                                  | Exhibit 25-7             |                             |   | $V_{FO} = V_{F}$                                 | - V <sub>R</sub>   | 5445                                  | Exhibit 25-1  | 4 6780              | No                                 |
|  |                                  |                          |                             |   | V <sub>R</sub>                                   |                    | 703                                   | Exhibit 25-3  | 2100                | No                                 |
| Flow Entering  | g Merge In                       | fluence A                | rea                         |   | Flow En  | terir              | ng Dive                               | rge Influen   | ce Area             | •                                  |
|  | Actual                           | 1                        | Desirable                   | Violation?  |  | 1                  | Actual                                | Max Desirab   |                     | Violation                          |
| V <sub>R12</sub>   |                                  | Exhibit 25-7             |                             |   | V <sub>12</sub>                                  |                    | 3828                                  | Exhibit 25-14                                       | 4400:All            | No                                 |
| Level of Serv  |                                  | •                        |                             |   |  |                    |                                       | terminatio  | •                   | <b>F</b> )                         |
| $D_R = 5.475 + 0.$   | .00734 v <sub>R</sub> +          | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>      |   |  | O <sub>R</sub> = 4 | 4.252 + 0                             | .0086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>  |                                    |
| D <sub>R</sub> = (pc/mi/   | /ln)                             |                          |                             |   | $D_R = 27$                                       | .7 (pc             | :/mi/ln)                              |   |                     |                                    |
| ,  | it 25-4)                         |                          |                             |   | LOS = C  | (Exhi              | bit 25-4)                             |   |                     |                                    |
| Speed Deterr   | mination                         |                          |                             |   | Speed D  | eter)              | minatio                               | on  |                     |                                    |
| M <sub>S</sub> = (Exibit 2   | 5-19)                            |                          |                             |   | J.   | •                  | xhibit 25                             | •   |                     |                                    |
| i e  | nibit 25-19)                     |                          |                             |   | $S_R$ = 50.0 mph (Exhibit 25-19)                 |                    |                                       |   |                     |                                    |
| S <sub>R</sub> = mph (Ext  | ,                                |                          |                             |   |  |                    |                                       |   |                     |                                    |
| S <sub>0</sub> = mph (Exh  | nibit 25-19)<br>nibit 25-14)     |                          |                             |   | $S_0 = 56$                                       | .3 mpł             | ı (Exhibit                            | 25-19)  |                     |                                    |

|   | RAI                              | <u>MPS A</u> ND  | RAMP JUNG                | <u>CTIONS</u> W  | <u>ORKSHE</u>  | ET   |             |                                    |                   |                                    |
|---|----------------------------------|--|--------------------------|--|--|--|-------------|------------------------------------|-------------------|------------------------------------|
| General Info  | rmation                          |  |                          | Site Infor   | mation   |  |             |                                    |                   |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 02/14                            | 1/12   | Jui<br>Jui               | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | E<br>N   | Southbound<br>Exit 4 SB C<br>NYSDOT<br>2026 Flyove | n-Ramp      |                                    |                   |                                    |
| Project Description   | Exit 4                           |  |                          |  |  |  |             |                                    |                   |                                    |
| Inputs  |                                  |  |                          |  |  |  |             |                                    |                   |                                    |
| Jpstream Adj Ramp   |                                  | Terrain: Level   |                          |  |  |  |             |                                    | Downstrea<br>Ramp | am Adj                             |
| Yes O   |                                  |  |                          |  |  |  |             |                                    | Yes               | □ On                               |
| ∏ No  | ff                               |  |                          |  |  |  |             |                                    | ☑ No              | ☐ Off                              |
| - <sub>up</sub> = 1585  | ft                               | S  | <sub>FF</sub> = 56.0 mph |  | $S_{FR} = 40.0 \text{ mph}$  |  |             |                                    |                   |                                    |
| $V_{\rm u} = 640 \text{ V}$   | eh/h                             |  |                          | show lanes, L <sub>A</sub> ,                           |  |  |             | ľ                                  | $V_D =$           | veh/h                              |
| Conversion  | to pc/h Und                      | der Base C   | Conditions               |  |  |  |             |                                    |                   |                                    |
| (pc/h)  | V<br>(Veh/hr)                    | PHF  | Terrain                  | %Truck   | %Rv  | f <sub>HV</sub>                                    |             | f <sub>p</sub>                     | v = V/PHF         | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 4950                             | 0.92   | Level                    | 2  | 0  | 0.990  |             | 1.00                               | Ę                 | 434                                |
| Ramp  | 650                              | 0.93   | Level                    | 5  | 0  | 0.976  |             | 1.00                               |                   | 716                                |
| UpStream  | 640                              | 0.92   | Level                    | 2  | 0  | 0.990  |             | 1.00                               |                   | 703                                |
| DownStream  | <u> </u>                         | Merge Areas  |                          |  |  |  | Div         | verge Areas                        |                   |                                    |
| Estimation o  |                                  | Estimati   | on of v                  |  | reige Aleas  |  |             |                                    |                   |                                    |
|   | V <sub>12</sub> = V <sub>F</sub> | (D)  |                          |  |  |  | <del></del> |                                    |                   |                                    |
| _   |                                  | •  | 0E 0 or 0E 0\            |  |  | \  |             | + (V <sub>F</sub> - V <sub>F</sub> |                   |                                    |
| -EQ =<br>D _  |                                  |  | 25-2 or 25-3)            |  | L <sub>EQ</sub> =  |  |             | quation 25                         |                   |                                    |
| P <sub>FM</sub> =   |                                  |  | on (Exhibit 25-5)        |  | P <sub>FD</sub> =  |  |             | ing Equation                       | on (Exhibit       | 25-12)                             |
| 1 <sub>12</sub> =   | 3336                             |  | - 05 4 05                |  | V <sub>12</sub> =  |  | pc          | :/h                                |                   |                                    |
| $V_3$ or $V_{av34}$   | 2098 p<br>5)                     | oc/n (Equation   | n 25-4 or 25-            |  | V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 25-15 or 25-16) |  |             |                                    |                   |                                    |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                          |                                  | s 🗹 No   |                          |  | Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No    |  |             |                                    |                   |                                    |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                          |                                  |  |                          |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                     |  |             |                                    |                   |                                    |
| Yes,V <sub>12a</sub> =  |                                  | (Equation 25   | -8)                      |  | If Yes,V <sub>12a</sub> =  |  | pc          | :/h (Equatio                       | on 25-18)         |                                    |
| Capacity Ch   |                                  | ( 1  | -/                       |  | Capacity   | / Checl  | rs          |                                    |                   |                                    |
| aparenty con-   | Actual                           | Ca   | apacity                  | LOS F?   |  | 1  | ctual       | Ca                                 | pacity            | LOS F                              |
|   |                                  |  |                          |  | V <sub>F</sub>   |  |             | Exhibit 25-                        | 14                |                                    |
| $V_{FO}$  | 6150                             | Exhibit 25-7   |                          | No   | $V_{FO} = V_F$   | · V <sub>D</sub>                                   |             | Exhibit 25-                        | 14                |                                    |
| FO  |                                  |  |                          |  | V <sub>R</sub>   | K  |             | Exhibit 25                         |                   | +                                  |
| Flow Enterin  | n Merge In                       | fluence A  |                          |  | •  | terina l   | Divorc      | je Influei                         |                   | <u></u>                            |
| TOW LINEITH   | Actual                           |  | Desirable                | Violation?   | I IOW LII  | Actua  |             | Max Desi                           |                   | Violation?                         |
| V <sub>R12</sub>  | 4052                             | Exhibit 25-7   | 4600:All                 | No   | V <sub>12</sub>  |  |             | chibit 25-14                       |                   |                                    |
| Level of Serv   | ice Detern                       |  |                          |  |  | Servic   |             | erminatio                          | on (if no         | t F)                               |
|   | + 0.00734 v <sub>R</sub> + 0     |  |                          |  |  |  |             | 086 V <sub>12</sub> - 0            |                   | /                                  |
| ) <sub>R</sub> = 28.5 (p  |                                  | 12   | М                        |  |  | c/mi/ln)   |             | 12                                 | U                 |                                    |
| 10  | ibit 25-4)                       |  |                          |  |  | xhibit 25  | -4)         |                                    |                   |                                    |
| Speed Deter   | -                                |  |                          |  | Speed D  |  |             | <u> </u>                           |                   |                                    |
|   | ibit 25-19)                      |  |                          |  | <del> </del>   | khibit 25-19                                       |             |                                    |                   |                                    |
| =   | (Exhibit 25-19)                  |  |                          |  |  | h (Exhibit   |             |                                    |                   |                                    |
| ••  |                                  |  |                          |  |  | h (Exhibit   |             |                                    |                   |                                    |
| S <sub>0</sub> = 50.2 mph (Exhibit 25-19)                             |                                  |  |                          |  | ] ° .  | -  | -           |                                    |                   |                                    |
| i = 50.0  mph   | (Exhibit 25-1/1)                 | S = 50.0 mph (Exhibit 25-14) Copyright © 2007 University of Florida, All Rights Reserved |                          |  |  | h (Exhibit :                                       | ノケートケト      |                                    |                   |                                    |

|   |                         |                                 | MPS AND                     | RAMP JUNG           |   |   |  |                   |                        |                                      |                                      |
|---|-------------------------|---------------------------------|-----------------------------|---------------------|---|---|--|-------------------|------------------------|--------------------------------------|--------------------------------------|
| General   | Inforn                  | nation                          |                             |                     | Site Infor  | mation  |  |                   |                        |                                      |                                      |
| Analyst<br>Agency or C<br>Date Perforr<br>Analysis Tim      | med                     | SEB<br>CHA<br>02/14<br>AM       | /12                         | Jui<br>Jui          | eeway/Dir of Tr<br>nction<br>isdiction<br>alysis Year | ]<br>]  |  |                   | mp                     |                                      |                                      |
| Project Desc  | cription E              | xit 4                           |                             |                     |   |   |  |                   |                        |                                      |                                      |
| nputs   |                         |                                 |                             |                     |   |   |  |                   |                        |                                      |                                      |
| Jpstream A  |                         |                                 | Terrain: Level              |                     |   |   |  |                   |                        | Downstre<br>Ramp                     | eam Adj                              |
| Yes   | □ On                    |                                 |                             |                     |   |   |  |                   |                        | Yes                                  | ☐ On                                 |
| ™ No  | ☐ Off                   |                                 |                             |                     |   |   |  |                   |                        | □ No                                 | ✓ Off                                |
| - <sub>up</sub> =<br>/ <sub>u</sub> =                       | ft<br>veh/h             |                                 | S                           | FF = 56.0 mph       | show lanes, L <sub>a</sub> ,                          | S <sub>FR</sub> = 4   | 0.0 mp   | h                 |                        | L <sub>down</sub> = V <sub>D</sub> = | 4700 ft<br>640 veh/h                 |
|   | sion to                 | nc/h l Inc                      | lar Rasa (                  | Conditions          | mow lanes, L <sub>A</sub> ,                           | D' R' f   |  |                   |                        |                                      |                                      |
|   |                         | <i>γ</i>                        |                             |                     | 0/7   | 0/5   | 1  | . 1               | r                      |                                      | Ftt                                  |
| (pc/l   | n)                      | (Veh/hr)                        | PHF                         | Terrain             | %Truck  | %Rv   |  | f <sub>HV</sub>   | f <sub>p</sub>         | V = V/PH                             | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   |                         | 5200                            | 0.92                        | Level               | 2   | 0   | 0.9  | 990               | 1.00                   | ļ                                    | 5709                                 |
| Ramp  |                         | 390                             | 0.93                        | Level               | 3   | 0   | 0.9  | 985               | 1.00                   | 1                                    | 426                                  |
| UpStream  |                         | / 10                            | 0.00                        | 1                   |   |   |  | 200               | 1.00                   | -                                    | 700                                  |
| DownStrear  | m                       | 640                             | 0.92                        | Level               | 2   | 0   | 0.9  | 990               | 1.00                   | )<br>)                               | 703                                  |
| Estimat   | ion of                  |                                 | Merge Areas                 |                     |   | Estimati  | ion o  |                   | Diverge Area           | 15                                   |                                      |
| _Stimat   | 1011 01                 |                                 |                             |                     |   | LStillati   |  | '' <b>'</b> 12    |                        |                                      |                                      |
|   |                         | $V_{12} = V_F$                  | (P <sub>FM</sub> )          |                     |   |   |  | V <sub>12</sub> = | $V_R + (V_F -$         | $V_R)P_{FD}$                         |                                      |
| EQ =  |                         | 2826.70                         | (Equation :                 | 25-2 or 25-3)       |   | L <sub>EQ</sub> =   |  |                   | (Equation 2            | 25-8 or 25-                          | 9)                                   |
| P <sub>FM</sub> =   |                         | 0.614                           | using Equati                | on (Exhibit 25-5)   |   | P <sub>FD</sub> =   |  |                   | using Equa             |                                      |                                      |
| / <sub>12</sub> =   |                         | 3505 p                          | oc/h                        |                     |   | V <sub>12</sub> =   |  |                   | pc/h                   |                                      | ,                                    |
| <sub>3</sub> or V <sub>av34</sub>                           |                         | 2204 p                          | c/h (Equatio                | n 25-4 or 25-       |   | V <sub>3</sub> or V <sub>av34</sub>   |  |                   | -                      | on 25-15 or 21                       | 5-16)                                |
|   |                         | 5)                              |                             |                     |   | $V_3$ or $V_{av34}$ pc/h (Equation 25-15 or 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No |  |                   |                        |                                      |                                      |
|   |                         | pc/h? TYes                      |                             |                     |   |   |  |                   |                        |                                      |                                      |
| Is $V_3$ or $V_{av}$  | <sub>34</sub> > 1.5 * \ | $I_{12}/2  \square \text{ Yes}$ | s ☑ No                      |                     |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No<br>If Yes, $V_{12a} =$ pc/h (Equation 25-18)       |  |                   |                        |                                      |                                      |
| Yes,V <sub>12a</sub> =                                      | =                       | pc/h (                          | Equation 25                 | -8)                 |   | If Yes,V <sub>12a</sub> =   |  |                   | pc/h (Equa             | ition 25-18)                         |                                      |
| Capacit   | y Chec                  | ks                              |                             |                     |   | Capacity  | y Ch   | ecks              |                        |                                      |                                      |
|   |                         | Actual                          | Ca                          | pacity              | LOS F?  |   |  | Actual            |                        | Capacity                             | LOS F?                               |
|   |                         |                                 |                             |                     |   | $V_{F}$   |  |                   | Exhibit 2              | 5-14                                 |                                      |
| V <sub>FC</sub>   | ,                       | 6135                            | Exhibit 25-7                |                     | No  | $V_{FO} = V_{F}$  | - V <sub>R</sub>                                 |                   | Exhibit 2              | 5-14                                 |                                      |
|   |                         |                                 |                             |                     |   | V <sub>R</sub>  | Ť  |                   | Exhibit 2              | 25-3                                 |                                      |
| Flow En   | torina                  | Morgo In                        | fluence A                   | roa                 | <u> </u>  |   | torin  | a Dive            | erge Influ             |                                      | <u></u>                              |
| IOW LI  | Itering                 | Actual                          |                             | Desirable           | Violation?  | I IOW LII   | -  | ctual             | Max De                 |                                      | Violation?                           |
| V <sub>R1</sub>   | -                       | 3931                            | Exhibit 25-7                | 4600:All            | No  | V <sub>12</sub>   | <del>                                     </del> | oluui             | Exhibit 25-14          |                                      | violation:                           |
| evol of   | f Sonii                 |                                 | nination (i                 |                     | 140   |   | Sor  | vice D            | etermina               |                                      | )<br>of <b>F</b> )                   |
|   |                         |                                 | .0078 V <sub>12</sub> - 0.0 |                     |   |   |  |                   |                        | •                                    | J(F)                                 |
|   |                         |                                 | .0076 v <sub>12</sub> - 0.0 | 0027 L <sub>A</sub> |   |   | • •  |                   | 0.0086 V <sub>12</sub> | - 0.009 L <sub>D</sub>               |                                      |
| IX.   | 27.8 (pc/n              | •                               |                             |                     |   |   | c/mi/l   | •                 |                        |                                      |                                      |
|   | C (Exhibit              |                                 |                             |                     |   |   |  | 25-4)             |                        |                                      |                                      |
| Speed L   | Determ                  | ination                         |                             |                     |   | Speed D   |  |                   | on                     |                                      |                                      |
| $M_{\rm S} = 0.$  | 416 (Exibi              | t 25-19)                        |                             |                     |   | $D_s = (E_s)$   | xhibit 2   | :5-19)            |                        |                                      |                                      |
| -   | 0.2 mph (E              | xhibit 25-19)                   |                             |                     |   | S <sub>R</sub> = mp   | oh (Exh  | nibit 25-19       | )                      |                                      |                                      |
| ••  | -                       | xhibit 25-19)                   |                             |                     |   | S <sub>0</sub> = mp   | oh (Ext  | nibit 25-19       | )                      |                                      |                                      |
| S = 50.1 mph (Exhibit 25-14)                                |                         |                                 |                             |                     |   | 1   | oh (Exh  | nibit 25-15       | )                      |                                      |                                      |
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|  |  |                            | FREEWA                | Y WEAV       | /ING WOR   | KSHEE          | Т                 |   |              |  |  |
|--|--|----------------------------|-----------------------|--------------|--|----------------|-------------------|---|--------------|--|--|
| Genera   | l Informat   | ion                        |                       |              | Site Information   |                |                   |   |              |  |  |
| Analyst<br>Agency/Cor<br>Date Perfor<br>Analysis Tir | med  | SEB<br>CHA<br>02/14/<br>AM | 12                    |              | Freeway/Dir of Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | Exit 2<br>NYSE    | lorthbound<br>E on to 2W of<br>OOT<br>Flyover | f            |  |  |
| Inputs   |  |                            |                       |              |  |                |                   |   |              |  |  |
| Weaving nu<br>Weaving se<br>Terrain                  | ee-flow speed, and spe | , N                        | 56<br>4<br>815<br>Lev | el           | Weaving type<br>Volume ratio,<br>Weaving ratio             | VR             |                   | A<br>0.27<br>0.32                             |              |  |  |
| Conver   | sions to p   | oc/h Unde                  | r Base C              | ondition     |  |                |                   | ,   | _            |  |  |
| (pc/h)   | V  | PHF                        | Truck %               | RV %         | E <sub>T</sub>   | E <sub>R</sub> | $f_{HV}$          | fp  | V            |  |  |
| $V_{o1}$   | 2640   | 0.92                       | 2                     | 0            | 1.5  | 1.2            | 0.990             | 1.00  | 2898         |  |  |
| $V_{02}$   | 0  | 0.92                       | 2                     | 0            | 1.5  | 1.2            | 0.990             | 1.00  | 0            |  |  |
| V <sub>w1</sub>                                      | 670  | 0.92                       | 2                     | 0            | 1.5  | 1.2            | 0.990             | 1.00  | 735          |  |  |
| $V_{w2}$   | 310  | 0.92                       | 2                     | 0            | 1.5  | 1.2            | 0.990             | 1.00  | 340          |  |  |
| V <sub>w</sub>                                       | 1  | •                          |                       | 1075         | V <sub>nw</sub>  |                |                   | Į.  | 2898         |  |  |
| V  |  |                            |                       | <u> </u>     |  | l              |                   |   | 3973         |  |  |
| Weavin   | g and No   | n-Weavin                   | g Speeds              | 3            |  |                |                   |   |              |  |  |
|  |  |                            | Unconstr              |              |  |                |                   | trained                                       |              |  |  |
| - /F. H.H.H.O.                                       | 4 ()   | Weaving                    |                       |              | aving (i = nw)   | Weavii         | ng (i = w)        | Non-Wea                                       | ving ( = nw) |  |  |
| a (Exhibit 24<br>b (Exhibit 24                       |  | 0.15<br>2.20               |                       |              | 0035   |                |                   |   |              |  |  |
| c (Exhibit 24  |  | 0.97                       |                       | <del>}</del> | .30  |                |                   |   |              |  |  |
| d (Exhibit 2   |  | 0.80                       |                       |              | 0.75   |                |                   |   |              |  |  |
| Weaving intens                                       |  | 0.96                       | )                     | 0            | ).47   |                |                   |   |              |  |  |
| Weaving and no<br>speeds, Si (mi/h                   |  | 38.4                       | 5                     | 46           | 5.27   |                |                   |   |              |  |  |
| Number of I<br>Maximum n                             | anes required<br>umber of lanes  | s, Nw (max)                |                       |              | 1.36<br>1.40   | ie Ni Ni.      | (== ==) = = == == |   |              |  |  |
|  | If Nw < Nw   | • •                        |                       |              | f Service,   |                | w (max) const     | iairieu operati                               | UII          |  |  |
|  | gment speed,   |                            | Denisity,             | 43.86        | i Jei vice,  | unu vap        | Jacity            |   |              |  |  |
|  | gment density,   |                            |                       | 22.65        |  |                |                   |   |              |  |  |
| Level of ser   |  | . d                        |                       | C            |  |                |                   |   |              |  |  |
|  | base condition   | n, c <sub>h</sub> (pc/h)   |                       | 6352         |  |                |                   |   |              |  |  |
|  | a 15-minute fl   |                            | ı/h)                  | 6289         |  |                |                   |   |              |  |  |
|  | Capacity as a full-hour volume, c <sub>h</sub> (veh/h)   |                            |                       |              |  |                |                   |   |              |  |  |
| Notes  |  |                            |                       |              |  |                |                   |   |              |  |  |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|   |   |                            | FREEWA                | Y WEAV   | ING WOR         | KSHEE          | Τ               |  |              |  |  |
|---|---|----------------------------|-----------------------|--|-----------------|----------------|-----------------|--|--------------|--|--|
| General   | Informat  | ion                        |                       |  | Site Info       | rmation        |                 |  |              |  |  |
| Analyst<br>Agency/Con<br>Date Perforr<br>Analysis Tim | med   | SEB<br>CHA<br>02/14/<br>AM | 12                    | Freeway/Dir of Travel<br>Weaving Seg Location<br>Jurisdiction<br>Analysis Year |                 |                | Exit 2'<br>NYSD | outhbound<br>W on to 2E of<br>OOT<br>Flyover | if           |  |  |
| Inputs  |   |                            |                       |  |                 |                |                 |  |              |  |  |
| Weaving nui<br>Weaving seq<br>Terrain                 | e-flow speed, s<br>mber of lanes,<br>g length, L (ft) | Ň                          | 56<br>4<br>810<br>Lev | IVVEAVITIO TATIO. N  |                 |                |                 | A<br>0.22<br>0.31                            |              |  |  |
| Convers   | sions to p  | oc/h Unde                  | er Base C             | ondition   |                 | r              | 1               | 1  |              |  |  |
| (pc/h)  | V   | PHF                        | Truck %               | RV %   | E <sub>T</sub>  | E <sub>R</sub> | $f_{HV}$        | fp   | V            |  |  |
| $V_{o1}$  | 3880  | 0.92                       | 2                     | 0  | 1.5             | 1.2            | 0.990           | 1.00   | 4259         |  |  |
| $V_{o2}$  | 0   | 0.92                       | 2                     | 0  | 1.5             | 1.2            | 0.990           | 1.00   | 0            |  |  |
| V <sub>w1</sub>                                       | 770   | 0.92                       | 2                     | 0  | 1.5             | 1.2            | 0.990           | 1.00   | 845          |  |  |
| $V_{w2}$  | 350   | 0.92                       | 2                     | 0  | 1.5             | 1.2            | 0.990           | 1.00   | 384          |  |  |
| $V_{_{\mathrm{W}}}$                                   | 1   | •                          | •                     | 1229   | V <sub>nw</sub> |                | •               | •  | 4259         |  |  |
| V   | 1   |                            |                       |  | ,               | ı              |                 |  | 5488         |  |  |
| Weaving   | g and No  | n-Weavin                   | g Speeds              | 3  |                 |                |                 |  |              |  |  |
|   |   |                            | Unconstr              | 4  |                 |                |                 | trained                                      |              |  |  |
| o /Fubibit 0.4  | 1.()  | Weaving                    |                       |  | ving (i = nw)   | Weavir         | ng (i = w)      | Non-Wea                                      | ving ( = nw) |  |  |
| a (Exhibit 24<br>b (Exhibit 24                        |   | 0.15<br>2.20               |                       |  | .00             |                |                 | -  |              |  |  |
| c (Exhibit 24   |   | 0.97                       |                       |  | .30             |                |                 |  |              |  |  |
| d (Exhibit 24   |   | 0.80                       |                       |  | .75             |                |                 |  |              |  |  |
| Weaving intensi                                       | •   | 1.22                       | )                     | 0  | .62             |                |                 |  |              |  |  |
| Weaving and no<br>speeds, Si (mi/h                    |   | 35.7                       | 4                     | 43   | 3.40            |                |                 |  |              |  |  |
| Number of la  | anes required annes                                   |                            | ned operation,        | Nw   | 1.26<br>1.40    |                |                 |  |              |  |  |
|   | ▼ If Nw < Nw  | ,                          |                       |  |                 |                | v (max) constr  | rained operat                                | ion          |  |  |
|   |   |                            |                       |  | f Service,      | and Cap        | acity           |  |              |  |  |
| Weaving se  | gment speed,  | S (mi/h)                   |                       | 41.41  |                 |                |                 |  |              |  |  |
|   | gment density,  | D (pc/mi/ln)               |                       | 33.13  |                 |                |                 |  |              |  |  |
| Level of serv   |   | ,                          |                       | D  |                 |                |                 |  |              |  |  |
|   | base condition  | <u> </u>                   |                       | 6603<br>6538   |                 |                |                 |  |              |  |  |
|   | Capacity as a 15-minute flow rate, c (veh/h)          |                            |                       |  |                 |                |                 |  |              |  |  |
|   | a full-hour vol                                       | ume, c <sub>h</sub> (veh/h | 1)                    | 6015   |                 |                |                 |  |              |  |  |
| Notes   |   |                            |                       |  |                 |                |                 |  |              |  |  |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

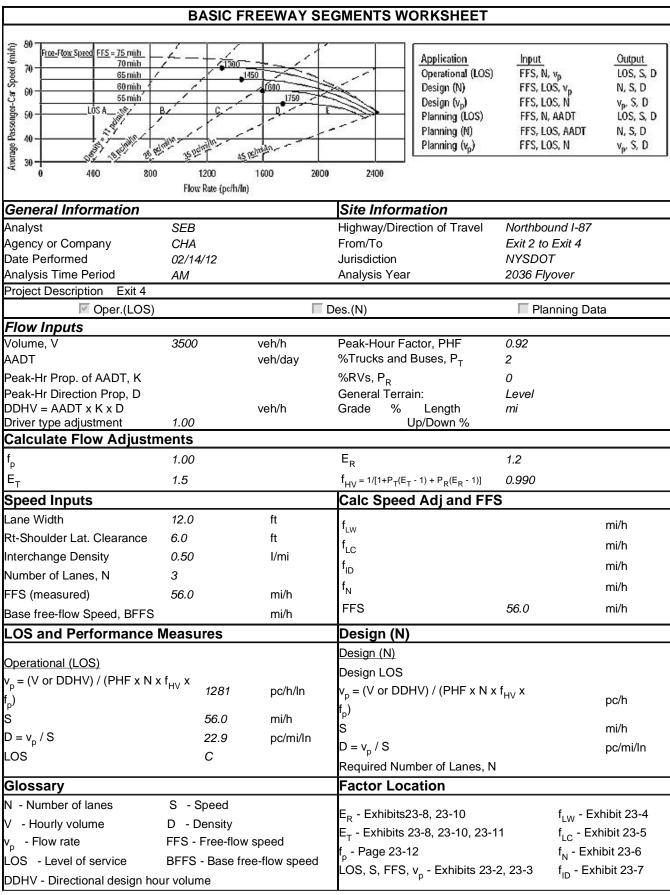
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

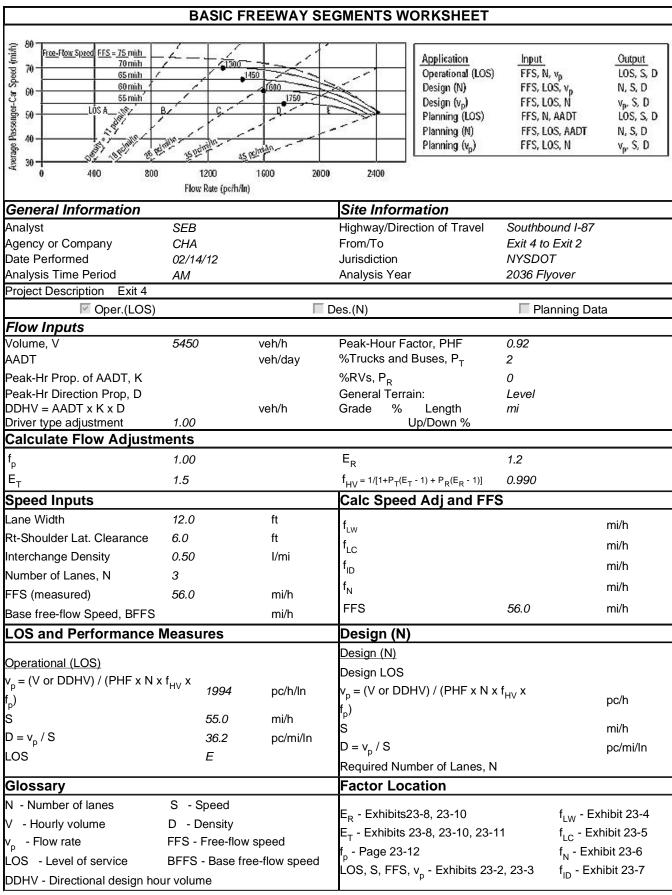
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

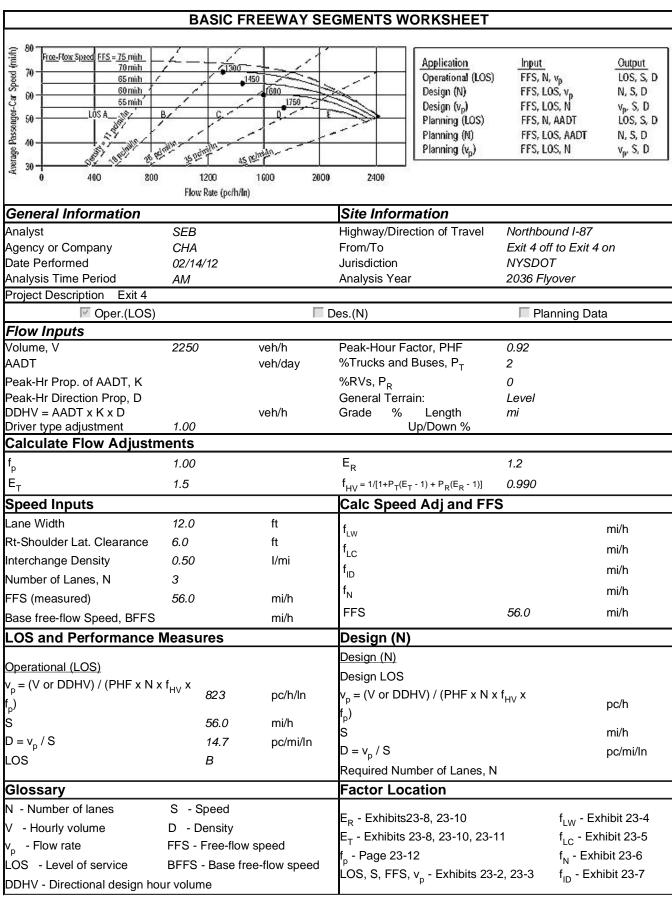
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such



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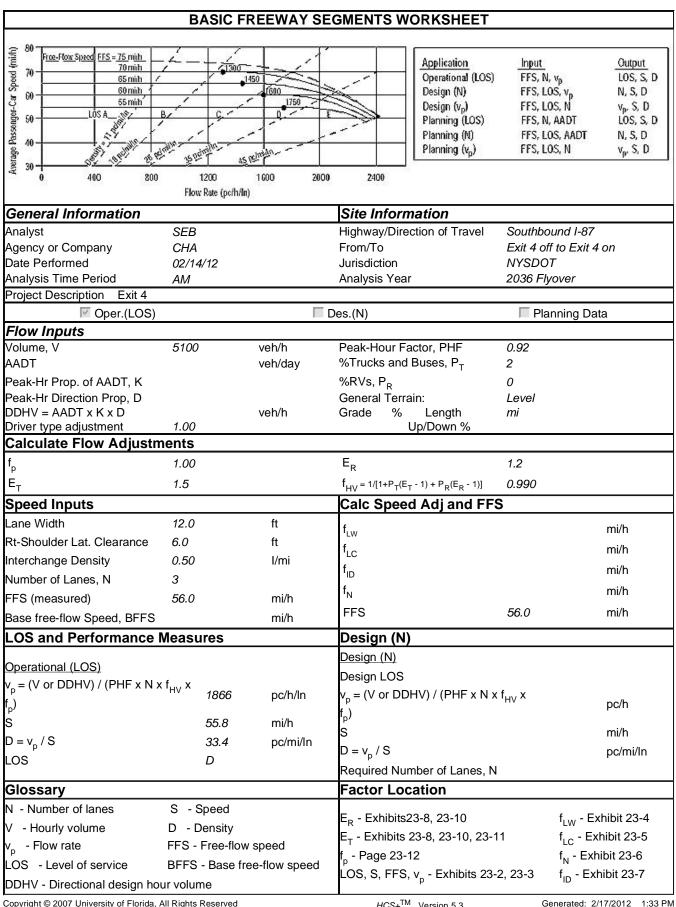
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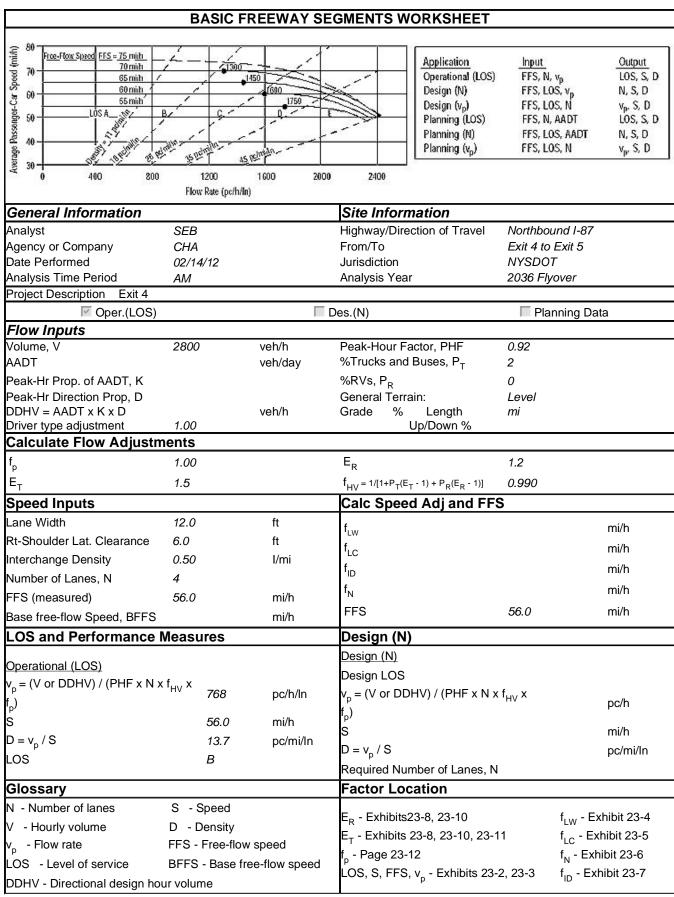
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|  | BASIC F  | REEWAY SI                                | EGMENTS W   | ORKSHEET   |   |   |
|--|--|--|---|--|---|---|
| S0   Free-Flow Speed   FFS = 75 mith   70 mith   70 mith   65 mith   65 mith   60 mith   55 mith   60 mith   65 mith   60 mi | B C  | 450<br>(600)<br>1750<br>0<br>1600<br>200 | 00 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N<br>FFS, L<br>FFS, N<br>FFS, L<br>FFS, L | OS, V <sub>p</sub> N, S, D<br>OS, N V <sub>p</sub> , S, D<br>, AADT LOS, S, D<br>OS, AADT N, S, D       |
| General Information  | Flow Rate (pc/h/lin                                    | l.                                       | Site Inform   | mation   |   |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/14/12<br>AM                           |  |   | ection of Travel   |   |   |
| ✓ Oper.(LOS)   |  |  | Des.(N)   |  | □ Pla   | inning Data   |
| <b>Flow Inputs</b><br>Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K  | 2450   | veh/h<br>veh/day                         | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub> |  | 0.92<br>2<br>0  |   |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D<br>Driver type adjustment   | 1.00   | veh/h                                    | General Terra<br>Grade %                            | ain:<br>Length<br>Up/Down %  | Level<br>mi   |   |
| Calculate Flow Adjustr   | 1.00   |  | E <sub>R</sub>                                      |  | 1.2   |   |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.5  |  | • •   | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990   |   |
| Speed Inputs   |  |  |   | d Adj and FFS  |   |   |
| Lane Width   | 12.0   | ft                                       |   | <u> </u>   |   | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft                                       | f <sub>LW</sub>                                     |  |   | mi/h  |
| Interchange Density  | 0.50   | I/mi                                     | f <sub>LC</sub>                                     |  |   | mi/h  |
| Number of Lanes, N   | 3  |  | $f_{ID}$  |  |   | mi/h  |
| FFS (measured)   | 56.0   | mi/h                                     | $f_N$   |  |   | mi/h  |
| Base free-flow Speed, BFFS   | 00.0   | mi/h                                     | FFS   |  | 56.0  | mi/h  |
| LOS and Performance  | Measures   | ,  | Design (N)  | )  |   |   |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N x   |  | pc/h/ln                                  | <u>Design (N)</u><br>Design LOS                     | )HV) / (PHF x N x 1  | f <sub>HV</sub> x                                       | pc/h  |
| f <sub>p</sub> )<br>S  | 56.0   | mi/h                                     | f <sub>p</sub> )                                    |  |   | μι/Π  |
| $D = v_p / S$  | 16.0   | pc/mi/ln                                 | s   |  |   | mi/h  |
| LOS  | 16.0<br>B  | ρο/πι/π                                  | $D = v_p / S$                                       |  |   | pc/mi/ln  |
|  |  |  |   | mber of Lanes, N   |   |   |
| Glossary   |  |  | Factor Loc  | cation   |   |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service  | S - Speed D - Density FFS - Free-flow BFFS - Base from |  | f <sub>p</sub> - Page 23-                           | 23-8, 23-10, 23-11<br>12   |   | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design ho   | our volume   |  |   | , v <sub>p</sub> - Exhibits 23-2   | ., 20-0   | ID - EXHIBIT 23-7   |
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|   | BASIC F                  | REEWAY SE   | GMENTS W                        | ORKSHEET   |  |                                    |
|---|--------------------------|---|---------------------------------|--|--|------------------------------------|
| S0   Free-Flow Spzed FIS = 75 mith            | B C C                    | 150 (600 1750 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 2400                            | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, vp FFS, LOS, vp FFS, LOS, N FFS, N, AAD FFS, LOS, AF FFS, LOS, N | v <sub>p</sub> , S, D<br>LOS, S, D |
|   | Flow Rate (pc/h/lin      |   | S SERVER                        |  |  |                                    |
| General Information                           |                          |   | Site Inform                     |  | 0 11 1   |                                    |
| Analyst                                       | SEB                      |   | Highway/Dire                    | ection of Travel   | Southbound Exit 5 to Exit  |                                    |
| Agency or Company<br>Date Performed           | CHA<br>02/14/12          |   | Jurisdiction                    |  | NYSDOT   | 4                                  |
| Analysis Time Period                          | AM                       |   | Analysis Yea                    | r  | 2036 Flyove  | -                                  |
| Project Description Exit 4                    | ,,                       |   |                                 | -  |  |                                    |
| ✓ Oper.(LOS)                                  |                          |   | Des.(N)                         |  | ☐ Plannin  | g Data                             |
| Flow Inputs                                   |                          |   |                                 |  |  |                                    |
| Volume, V                                     | 5850                     | veh/h   | Peak-Hour Fa                    |  | 0.92   |                                    |
| AADT  |                          | veh/day   | %Trucks and                     | Buses, P <sub>T</sub>  | 2  |                                    |
| Peak-Hr Prop. of AADT, K                      |                          |   | %RVs, P <sub>R</sub>            |  | 0  |                                    |
| Peak-Hr Direction Prop, D                     |                          | 1.0   | General Terra                   |  | Level  |                                    |
| DDHV = AADT x K x D Driver type adjustment    | 1.00                     | veh/h   | Grade %                         | Length<br>Up/Down %  | mi   |                                    |
| Calculate Flow Adjustr                        |                          |   |                                 | <del>оргосин 70</del>  |  |                                    |
| f <sub>p</sub>                                | 1.00                     |   | E <sub>R</sub>                  |  | 1.2  |                                    |
| E <sub>T</sub>                                | 1.5                      |   |                                 | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990  |                                    |
| Speed Inputs                                  |                          |   |                                 | d Adj and FFS  |  |                                    |
| Lane Width                                    | 12.0                     | ft  |                                 | a Auj ana i i c  | <u> </u>   |                                    |
| Rt-Shoulder Lat. Clearance                    | 6.0                      | ft  | $f_{LW}$                        |  |  | mi/h                               |
| Interchange Density                           | 0.50                     | I/mi  | $f_LC$                          |  |  | mi/h                               |
| - ·   |                          | 1/1111  | $f_ID$                          |  |  | mi/h                               |
| Number of Lanes, N                            | 3                        | • 11  | f <sub>N</sub>                  |  |  | mi/h                               |
| FFS (measured)                                | 56.0                     | mi/h  | FFS                             |  | 56.0   | mi/h                               |
| Base free-flow Speed, BFFS                    |                          | mi/h  |                                 |  | 30.0   | 1111/11                            |
| LOS and Performance                           | Measures                 |   | Design (N                       |  |  |                                    |
| Operational (LOS)                             |                          |   | <u>Design (N)</u><br>Design LOS |  |  |                                    |
| $v_p = (V \text{ or DDHV}) / (PHF x N : f_p)$ | x f <sub>HV</sub> x 2141 | pc/h/ln   | $v_p = (V \text{ or } DD)$      | PHV) / (PHF x N x  | f <sub>HV</sub> x  | pc/h                               |
| S   | 53.0                     | mi/h  | f <sub>p</sub> )                |  |  |                                    |
| $D = v_p / S$                                 | 40.4                     | pc/mi/ln  | S<br>D · · · / C                |  |  | mi/h                               |
| LOS   | E                        |   | $D = v_p / S$                   |  |  | pc/mi/In                           |
| Ola a a a m -                                 |                          |   |                                 | mber of Lanes, N   |  |                                    |
| Glossary                                      |                          |   | Factor Loc                      | cation   |  |                                    |
| N - Number of lanes                           | S - Speed                |   | E <sub>R</sub> - Exhibits       | 23-8, 23-10  | f, 1,  | , - Exhibit 23-4                   |
| V - Hourly volume                             | D - Density              |   | .,                              | 23-8, 23-10, 23-1  |  | - Exhibit 23-5                     |
| v <sub>p</sub> - Flow rate                    | FFS - Free-flow          |   | f <sub>n</sub> - Page 23-       |  |  | - Exhibit 23-6                     |
| LOS - Level of service                        | BFFS - Base fr           | ee-flow speed                                     | ۲                               | , v <sub>p</sub> - Exhibits 23-2   |  | - Exhibit 23-7                     |
| DDHV - Directional design ho                  | our volume               |   |                                 | , p = 1.11.51.6 20 2   | ., 'ID   |                                    |
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|  | BASIC F   | REEWAY SE  | GMENTS W  | ORKSHEET   |   |  |
|--|---|--|---|--|---|--|
| Washington (mill)  70  Free-Flow Spzed FIS = 75 mith 70 mith 7 | B C C   | 150 (500) 1750 (1750) ( | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AADT FFS, LOS, N | Output LOS, S, D N, S, D v <sub>p</sub> , S, D LOS, S, D N, S, D v <sub>p</sub> , S, D |
| General Information  | Flow Rate (pc/h/lin)  | ł į  | Site Inform   | mation   |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | CLD<br>CHA<br>07/30/13<br>AM                                      |  |   | ection of Travel   | Northbound I-8<br>Exit 5 to Exit 6<br>NYSDOT<br>2036 Flyover  | 7  |
| Oper.(LOS)   |   |  | Des.(N)   |  | Planning [  | Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 2650  | veh/h<br>veh/day   | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terr | l Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level   |  |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00  | veh/h  | Grade %   | Length<br>Up/Down %  | mi  |  |
| Calculate Flow Adjustr   |   |  |   |  | 4.0   |  |
| f <sub>p</sub>   | 1.00<br>1.5   |  | E <sub>R</sub>  | . 4) . D (5 4)1  | 1.2<br>0.990  |  |
| E <sub>⊤</sub><br>Speed Inputs   | 1.5   |  |   | ed Adj and FFS   |   |  |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>4  | ft<br>ft<br>I/mi   | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub>      | a Adjuna 11 c  |   | mi/h<br>mi/h<br>mi/h<br>mi/h   |
| Base free-flow Speed, BFFS   | 56.0  | mi/h<br>mi/h   | FFS   |  | 56.0  | mi/h   |
| LOS and Performance  |   | 1111/11  | Design (N   | 1  |   |  |
| Operational (LOS) $V_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$   |   | pc/h/ln<br>mi/h  | <u>Design (N)</u><br>Design LOS                                     | )<br>)HV) / (PHF x N x <sup>-</sup>  | f <sub>HV</sub> x   | pc/h   |
| D = v <sub>p</sub> / S<br>LOS  | 13.0<br>B   | pc/mi/ln   | S<br>D = v <sub>p</sub> / S<br>Required Nu                          | mber of Lanes, N   |   | mi/h<br>pc/mi/ln   |
| Glossary   |   |  | Factor Loc  | cation   |   |  |
| N - Number of Ianes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base freedour volume | -  | f <sub>p</sub> - Page 23-   | 23-8, 23-10, 23-1  | 1 f <sub>LC</sub> - f <sub>N</sub> - E  | Exhibit 23-4<br>Exhibit 23-5<br>(xhibit 23-6<br>Exhibit 23-7                           |
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|  | BASIC F  | REEWAY SE                    | EGMENTS V  | VORKSHEET  |  |  |
|--|--|------------------------------|--|--|--|--|
| Store   Free | By C.  | 150 (600)<br>1750<br>0 (600) |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v <sub>p</sub><br>FFS, LOS, v <sub>p</sub><br>FFS, LOS, N<br>FFS, N, AAD<br>FFS, LOS, AA<br>FFS, LOS, N | v <sub>p</sub> , S, D<br>LOS, S, D                                   |
| 0 400 800  | ) 1200<br>Flow Rate (pc/h/lin                                  | 1600 200<br>)                | 0 2400   |  |  |  |
| General Information  |  |                              | Site Infor   | mation   |  |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | CLD<br>CHA<br>07/30/13<br>AM                                   |                              | Highway/Dir<br>From/To<br>Jurisdiction<br>Analysis Yea                             | ection of Travel   | Southbound<br>Exit 6 to Exit<br>NYSDOT<br>2036 Flyover   | 5  |
| ✓ Oper.(LOS)   |  |                              | Des.(N)  |  | ☐ Plannin  | g Data   |
| Flow Inputs  |  |                              |  |  |  | <u> </u>   |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K  | 6150   | veh/h<br>veh/day             | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub>                                 | d Buses, P <sub>T</sub>  | 0.92<br>2<br>0   |  |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment   | 1.00   | veh/h                        | General Teri<br>Grade %  |  | Level<br>mi  |  |
| Calculate Flow Adjustr   |  |                              |  |  | 4.0  |  |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.00<br>1.5  |                              | E <sub>R</sub>   | F 4) · D /F 4)]  | 1.2<br>0.990   |  |
| •  | 1.5  |                              | -  | $E_{T} - 1) + P_{R}(E_{R} - 1)$  |  |  |
| Speed Inputs Lane Width  | 12.0   | ft                           |  | ed Adj and FFS   | )  |  |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft                           | $f_{LW}$   |  |  | mi/h   |
| Interchange Density  | 0.50   | I/mi                         | $f_{LC}$   |  |  | mi/h   |
| Number of Lanes, N   | 4  | ,,,,,                        | $f_{ID}$   |  |  | mi/h   |
| FFS (measured)   | ,<br>56.0  | mi/h                         | $f_N$  |  |  | mi/h   |
| Base free-flow Speed, BFFS   |  | mi/h                         | FFS  |  | 56.0   | mi/h   |
| LOS and Performance  |  | 1111/11                      | Design (N  | 1)   |  |  |
| Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF x N f_p)$  |  | pc/h/ln                      | Design (N) Design LOS v <sub>p</sub> = (V or DI                                    | -  | f <sub>HV</sub> x  | pc/h   |
| S<br>D=v <sub>p</sub> /S<br>LOS  | 56.0<br>30.1<br>D  | mi/h<br>pc/mi/ln             | $f_p$ ) $S$ $D = v_p / S$  |  |  | mi/h<br>pc/mi/ln   |
| Glossam  |  |                              | Factor Lo  | umber of Lanes, N  |  |  |
| Glossary  N - Number of lanes  V - Hourly volume  v <sub>p</sub> - Flow rate  LOS - Level of service  DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base frour volume |                              | E <sub>R</sub> - Exhibits<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23 | s23-8, 23-10<br>s 23-8, 23-10, 23-1  | 1 f <sub>LC</sub>  | - Exhibit 23-4<br>- Exhibit 23-5<br>- Exhibit 23-6<br>- Exhibit 23-7 |
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|   |                              | MPS AND        | RAMP JUNG                      | CTIONS W                                       | <u>ORKSHE</u>   | <u>EET</u>   |                 |                          |  |                                    |  |  |
|---|------------------------------|----------------|--------------------------------|--|---|--|-----------------|--------------------------|--|------------------------------------|--|--|
| General Info  | rmation                      |                |                                | Site Infor                                     | mation  |  |                 |                          |  |                                    |  |  |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric                | 02/14                        | Jui<br>Jui     | Junction Ex-<br>Jurisdiction N |  |   | Northbound I-87<br>Exit 2W On-Ramp<br>NYSDOT<br>2036 Flyover             |                 |                          |  |                                    |  |  |
| Project Description   |                              |                |                                | <u>,                                      </u> |   |  | ,               |                          |  |                                    |  |  |
| nputs   |                              |                |                                |  |   |  |                 |                          |  |                                    |  |  |
| Jpstream Adj Ramı   | )                            | Terrain: Level |                                |  |   |  |                 |                          | Downstrea<br>Ramp                            | am Adj                             |  |  |
| Yes O   |                              |                |                                |  |   |  |                 |                          | ☐ Yes  | □ On                               |  |  |
| □ No      O   | ff                           |                |                                |  |   |  |                 |                          | ™ No   | Off                                |  |  |
| L <sub>up</sub> = 1100 ft   |                              |                |                                |  |   | 10.0   |                 |                          | L <sub>down</sub> =                          | ft                                 |  |  |
| $V_u = 690 \text{ veh/h}$ $S_{FF} = 56.0 \text{ mph}$ Sketch ( show lanes, $L_{A'}$ |                              |                |                                |  |   | 10.0 mp  | )h              |                          | V <sub>D</sub> =                             | veh/h                              |  |  |
| Conversion  | to pc/h Und                  | der Base C     | Conditions                     |  |   |  |                 |                          |  |                                    |  |  |
| (pc/h)  | V<br>(Veh/hr)                | PHF            | Terrain                        | %Truck   | %Rv   |  | f <sub>HV</sub> | f <sub>p</sub>           | v = V/PHF                                    | x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| reeway  | 3100                         | 0.92           | Level                          | 2  | 0   | 0.   | 990             | 1.00                     | 3  | 403                                |  |  |
| Ramp  | 420                          | 0.92           | Level                          | 2  | 0   | 0.   | 990             | 1.00                     | _  | 161                                |  |  |
| UpStream  | 690                          | 0.92           | Level                          | 2  | 0   | 0.   | 990             | 1.00                     | ļ  | 757                                |  |  |
| DownStream  |                              | Morgo Aroas    |                                |  |   |  |                 | Diverge Areas            | <u>                                     </u> |                                    |  |  |
| Merge Areas <b>Estimation of v</b> <sub>12</sub>                                    |                              |                |                                |  |   | Estimation of V <sub>12</sub>  |                 |                          |  |                                    |  |  |
|   |                              | (P.,,)         |                                |  |   |  |                 | \/ (\) / \               | / \D   |                                    |  |  |
| $V_{12} = V_F (P_{FM})$<br>$L_{FO} = 894.10$ (Equation 25-2 or 25-3)                |                              |                |                                |  |   | $V_{12} = V_R + (V_F - V_R)P_{FD}$<br>$L_{FO} =$ (Equation 25-8 or 25-9) |                 |                          |  |                                    |  |  |
| EQ =<br>P <sub>FM</sub> =   |                              |                | on (Exhibit 25-5)              |  | Lee   |  |                 |                          |  |                                    |  |  |
| <sup>1</sup> 12 =   | 2046                         |                | SIT (EXHIBIT 25-5)             |  | P <sub>FD</sub> = using Equation (Exhibit 25-12)  |  |                 |                          |  |                                    |  |  |
|   |                              |                | n 25-4 or 25-                  |  | $V_{12} = pc/h$   |  |                 |                          |  |                                    |  |  |
| or V <sub>av34</sub>  | 5)                           | oom (Equatio   | 11 20 4 01 20                  |  | $V_3$ or $V_{av34}$ pc/h (Equation 25-15 or 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No |  |                 |                          |  |                                    |  |  |
| s $V_3$ or $V_{av34} > 2.7$   | 00 pc/h?                     | s 🗹 No         |                                |  |   |  |                 |                          |  |                                    |  |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5   | * V <sub>12</sub> /2         | s 🗹 No         |                                |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No  |  |                 |                          |  |                                    |  |  |
| Yes,V <sub>12a</sub> =  | pc/h                         | (Equation 25   | -8)                            |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)   |  |                 |                          |  |                                    |  |  |
| Capacity Ch   | ecks                         |                |                                |  | Capacit   | y Ch   | ecks            |                          |  |                                    |  |  |
|   | Actual                       | Ca             | ıpacity                        | LOS F?   |   |  | Actual          | C                        | apacity                                      | LOS F                              |  |  |
|   |                              |                |                                |  | V <sub>F</sub>  |  |                 | Exhibit 25               | i-14   |                                    |  |  |
| $V_{FO}$  | 3864                         | Exhibit 25-7   |                                | No   | $V_{FO} = V_{F}$  | - V <sub>R</sub>   |                 | Exhibit 25               | 5-14   |                                    |  |  |
|   |                              |                |                                |  | $V_R$   |  |                 | Exhibit 2                | 5-3  |                                    |  |  |
| low Enterin   | g Merge In                   | fluence A      | rea                            | <u> </u>                                       |   | terir  | ng Dive         | erge Influe              | ence Are                                     | <del></del><br>a                   |  |  |
|   | Actual                       |                | Desirable                      | Violation?                                     |   |  | Actual          | Max Des                  |  | Violation'                         |  |  |
| V <sub>R12</sub>  | 2507                         | Exhibit 25-7   | 4600:All                       | No   | V <sub>12</sub>   |  |                 | Exhibit 25-14            |  |                                    |  |  |
| evel of Serv  | vice Detern                  | nination (i    | f not F)                       |  | <del></del>   | Ser  | vice D          | eterminati               | ion (if no                                   | t F)                               |  |  |
|   | + 0.00734 v <sub>R</sub> + 0 | <u>-</u>       |                                |  |   | D <sub>R</sub> = 4   | 4.252 +         | 0.0086 V <sub>12</sub> - | 0.009 L <sub>D</sub>                         |                                    |  |  |
| ) <sub>R</sub> = 19.5 (p  | c/mi/ln)                     |                |                                |  | $D_R = (pc/mi/ln)$  |  |                 |                          |  |                                    |  |  |
|   | ibit 25-4)                   |                |                                |  |   | xhibit   | 25-4)           |                          |  |                                    |  |  |
| Speed Deter   |                              |                |                                |  | Speed L   |  |                 | on                       |  |                                    |  |  |
| -   | ribit 25-19)                 |                |                                |  | <del>                                     </del>  | xhibit 2   |                 |                          |  |                                    |  |  |
| =   | (Exhibit 25-19)              |                |                                |  | 1   |  | ribit 25-19     | )                        |  |                                    |  |  |
|   | (Exhibit 25-19)              |                |                                |  |   |  | nibit 25-19     |                          |  |                                    |  |  |
|   | (Exhibit 25-14)              |                |                                |  | ľ   |  | nibit 25-15     |                          |  |                                    |  |  |
| 5 = 52.2 mph  | (FX[][NII /n-141             |                |                                |  |   |  |                 |                          |  |                                    |  |  |

| <u> </u>  |                |                       | 107 (1711)               | S AND RAM  |  |  |                  |                |                                       |                     |           |  |  |
|---|----------------|-----------------------|--------------------------|--|--|--|------------------|----------------|---------------------------------------|---------------------|-----------|--|--|
| General   | Informa        |                       |                          |  | Site Infor                                       |  |                  |                |                                       |                     |           |  |  |
| Analyst Agency or Co Date Perform               | ned            | SEB<br>CHA<br>02/14   | <del>1</del> /12         | Jı<br>Jı   | avel Northbound I-87 Exit 4 NB Off to ASR NYSDOT |  |                  |                |                                       |                     |           |  |  |
| Analysis Time                                   |                | AM                    |                          | A  | nalysis Year                                     |  | 2036 I           | lyover         |                                       |                     |           |  |  |
| Project Desci                                   | ription Exit   | 4                     |                          |  |  |  |                  |                |                                       |                     |           |  |  |
| Inputs  |                |                       | Terrain: Leve            |  |  |  |                  |                |                                       | D                   | A -I:     |  |  |
| Upstream Ad  Yes                                | J Ramp<br>☐ On |                       | Terrain. Leve            |  |  |  |                  |                |                                       | Downstrea<br>Ramp   | m Aaj     |  |  |
|   |                |                       |                          |  |  |  |                  |                |                                       | ✓ Yes               | ☐ On      |  |  |
| ™ No  | ☐ Off          |                       |                          |  |  |  |                  |                |                                       | □ No                | ✓ Off     |  |  |
| L <sub>up</sub> =                               | ft             |                       | S                        | <sub>FF</sub> = 56.0 mph                             |  | S <sub>FR</sub> = 4  | 0.0 m            | oh             |                                       | L <sub>down</sub> = | 2600 ft   |  |  |
| V <sub>u</sub> =                                | veh/h          |                       |                          | Sketch ( show lanes, $L_A$ , $L_D$ , $V_R$ , $V_P$ ) |  |  |                  |                |                                       |                     | 190 veh/  |  |  |
| Convers   | ion to p       | c/h Und               | der Base (               | Conditions   |  |  |                  |                |                                       |                     |           |  |  |
| (pc/h) V PHF Terrain %Truck                     |                |                       |                          |  | %Rv  |  | f <sub>HV</sub>  | f <sub>p</sub> | v = V/PHF x f <sub>HV</sub> x         |                     |           |  |  |
| Freeway   |                | 3500                  | 0.92                     | Level  | 2  | 0  |                  | .990           | 1.00                                  | 3842                |           |  |  |
| Ramp  |                | 1040                  | 0.82                     | Level  | 2  | 0  | C                | .990           | 1.00                                  | 1281                |           |  |  |
| UpStream  |                | 100                   | 0.00                     | 1 1  |  |  | +                | 000            | 1.00                                  | 00                  | 4         |  |  |
| DownStream                                      | 1              | 190                   | 0.82<br>Merge Areas      | Level  | 2  | 0  |                  | .990           | 1.00<br>Diverge Areas                 | 23                  | 4         |  |  |
| Estimati  | on of v        |                       | ivier ge Areas           |  |  | Estimation of V <sub>12</sub>  |                  |                |                                       |                     |           |  |  |
|   | 1. 0. 1        | _                     | /D )                     |  |  |  |                  |                | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | \D                  |           |  |  |
| $V_{12} = V_F (P_{FM})$                         |                |                       |                          |  |  | $V_{12} = V_R + (V_F - V_R)P_{FD}$   |                  |                |                                       |                     |           |  |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)       |                |                       |                          |  |  | L <sub>EQ</sub> = 422.43 (Equation 25-8 or 25-9)   |                  |                |                                       |                     |           |  |  |
| P <sub>FM</sub> = using Equation (Exhibit 25-5) |                |                       |                          |  |  | $P_{FD}$ = 0.605 using Equation (Exhibit 25-12)  |                  |                |                                       |                     |           |  |  |
| V <sub>12</sub> =                               |                | pc/h                  |                          |  |  | $V_{12} = 2830 \text{ pc/h}$   |                  |                |                                       |                     |           |  |  |
| V <sub>3</sub> or V <sub>av34</sub>             |                |                       | (Equation 25             | -4 or 25-5)  |  | $V_3$ or $V_{av34}$ 1012 pc/h (Equation 25-15 or 25-16 Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |                  |                |                                       |                     |           |  |  |
| Is V <sub>3</sub> or V <sub>av3</sub>           | •              |                       |                          |  |  |  |                  |                |                                       |                     |           |  |  |
| Is V <sub>3</sub> or V <sub>av3</sub>           |                |                       |                          |  |  | Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * V <sub>12</sub> /2  Yes  No   |                  |                |                                       |                     |           |  |  |
| If Yes,V <sub>12a</sub> =                       |                |                       | (Equation 25             | -8)  |  | If Yes,V <sub>12a</sub> =  |                  |                | oc/h (Equation                        | 25-18)              |           |  |  |
| Capacity  | / Checks       |                       | 1                        |  | 1  | Capacity   | y Cr             | 1              |                                       |                     | _         |  |  |
|   |                | Actual                | C                        | apacity  | LOS F?   | .,   |                  | Actual         |                                       | pacity              | LOS F     |  |  |
|   |                |                       |                          |  |  | V <sub>F</sub>   |                  | 3842           | Exhibit 25-1                          | 4 6780              | No        |  |  |
| V <sub>FO</sub>                                 |                |                       | Exhibit 25-7             |  |  | $V_{FO} = V_{F}$   | - V <sub>R</sub> | 2561           | Exhibit 25-1                          | 4 6780              | No        |  |  |
|   |                |                       |                          |  |  | V <sub>R</sub>   |                  | 1281           | Exhibit 25-3                          | 3 2100              | No        |  |  |
| Flow En   | tering M       | erge In               | fluence A                | rea  |  | Flow En  | teri             | ng Dive        | rge Influen                           | ce Area             |           |  |  |
|   |                | Actual                | <del> </del>             | Desirable  | Violation?                                       |  | Actual           |                | Max Desiral                           |                     | Violation |  |  |
| V <sub>R12</sub>                                |                |                       | Exhibit 25-7             |  |  | V <sub>12</sub>  |                  | 2830           | Exhibit 25-14                         | 4400:All            | No        |  |  |
|   |                |                       | nination (i              |  |  |  |                  |                | terminatio                            | •                   | <u>F)</u> |  |  |
| $D_{R} = 5.47$                                  | 75 + 0.007     | 34 v <sub>R</sub> + 0 | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>                               |  | "  | D <sub>R</sub> = | 4.252 + 0      | 0.0086 V <sub>12</sub> - 0.           | .009 L <sub>D</sub> |           |  |  |
| D <sub>R</sub> = (pc/mi/ln)                     |                |                       |                          |  |  | $D_R = 22.3 \text{ (pc/mi/ln)}$  |                  |                |                                       |                     |           |  |  |
|   | Exhibit 25     |                       |                          |  |  |  | •                | bit 25-4)      |                                       |                     |           |  |  |
| Speed D   | etermin        | ation                 |                          |  |  | Speed D  | )ete             | rminati        | on                                    |                     |           |  |  |
| M <sub>S</sub> = (E                             | xibit 25-19    | ))                    |                          |  |  | $D_s = 0.4$  | 478 <b>(E</b>    | xhibit 25      | -19)                                  |                     |           |  |  |
| S <sub>R</sub> = mp                             | h (Exhibit     | 25-19)                |                          |  |  | S <sub>R</sub> = 49  | ).3 mp           | h (Exhibit     | 25-19)                                |                     |           |  |  |
|   | h (Exhibit     |                       |                          |  |  | $S_0 = 61$   | .4 mp            | h (Exhibit     | 25-19)                                |                     |           |  |  |
| 1   | h (Exhibit     |                       |                          |  |  | S = 52   | 2.0 mp           | h (Exhibit     | 25-15)                                |                     |           |  |  |
|   | 07 University  |                       |                          |  |  | HCS+ <sup>TM</sup>   |                  |                |                                       |                     |           |  |  |

|  |                            | TVAIII V                 | S AND RAM              |  |   |  | · · ·      |  |  |                |  |  |  |
|--|----------------------------|--------------------------|------------------------|--|---|--|------------|--|--|----------------|--|--|--|
| General Infor  | mation                     |                          |                        | Site Infor   |   |  |            |  |  |                |  |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioc | SEB<br>CHA<br>02/14<br>AM  | 4/12                     | F<br>J<br>A            | avel Northbound I-87 Exit 4 NB Off to Wolf NYSDOT 2036 Flyover |   |  |            |  |  |                |  |  |  |
| Project Description  |                            |                          |                        | j  |   |  | ,          |  |  |                |  |  |  |
| Inputs   |                            |                          |                        |  |   |  |            |  |  |                |  |  |  |
| Upstream Adj Ramp  |                            | Terrain: Level           |                        |  |   |  |            |  | Downstrea<br>Ramp                            | m Adj          |  |  |  |
| Yes Or   |                            |                          |                        |  |   |  |            |  | ☐ Yes  | □ On           |  |  |  |
| I No I Of  | •                          |                          |                        |  |   |  |            |  | ✓ No   | ☐ Off          |  |  |  |
| L <sub>up</sub> = 2600 ft  |                            |                          |                        |  |   | 0.0  | - h        |  | L <sub>down</sub> =                          | ft             |  |  |  |
| $V_u = 1040 \text{ veh/h}$ Sketch (show lanes, L <sub>j</sub>          |                            |                          |                        |  |   | 0.0 mp   | on         |  | V <sub>D</sub> =                             | veh/h          |  |  |  |
| Conversion to  | pc/h Und                   | der Base (               | Conditions             |  |   |  |            |  |  |                |  |  |  |
| (pc/h) V PHF Terrain %Truck  |                            |                          |                        |  |   |  | $f_{HV}$   | f <sub>p</sub>                         | v = V/PHF x f <sub>HV</sub> x                |                |  |  |  |
| Freeway  | 2450                       | 0.92                     | Level                  | 2  | 0   | 0  | .990       | 1.00                                   | 269  | 90             |  |  |  |
| Ramp   | 190                        | 0.82                     | Level                  | 2  | 0   | 0  | .990       | 1.00                                   | 234  |                |  |  |  |
| UpStream   | 1040                       | 0.82                     | Level                  | 2  | 0   | 0  | .990       | 1.00                                   | 128  | 31             |  |  |  |
| DownStream   |                            | Merge Areas              |                        |  | -   |  |            | l<br>Diverge Areas                     |  |                |  |  |  |
| Estimation of  |                            | ivier ge Areas           |                        |  | Estimati  | ion d  |            | Diverge Areas                          |  |                |  |  |  |
|  |                            | (D.)                     |                        |  | 20077740  |  |            | ., ., .,                               | <u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u> |                |  |  |  |
|  | $V_{12} = V_F$             |                          | >                      |  |   |  |            | = V <sub>R</sub> + (V <sub>F</sub> - V |  |                |  |  |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                              |                            |                          |                        |  |   |  |            | Equation 25-8                          |  |                |  |  |  |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)                        |                            |                          |                        |  |   | P <sub>FD</sub> = 0.682 using Equation (Exhibit 25-12)     |            |  |  |                |  |  |  |
| V <sub>12</sub> =  | pc/h                       |                          |                        |  | V <sub>12</sub> = 1909 pc/h   |  |            |  |  |                |  |  |  |
| V <sub>3</sub> or V <sub>av34</sub>                                    |                            | (Equation 25             | -4 or 25-5)            |  | $V_3$ or $V_{av34}$ 781 pc/h (Equation 25-15 or 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |  |            |  |  |                |  |  |  |
| Is $V_3$ or $V_{av34} > 2,70$  |                            |                          |                        |  |   |  |            |  |  |                |  |  |  |
| Is $V_3$ or $V_{av34} > 1.5$   | · <del>-</del>             |                          |                        |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No  |  |            |  |  |                |  |  |  |
| If Yes,V <sub>12a</sub> =  |                            | (Equation 25             | -8)                    |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-  |  |            |  |  |                |  |  |  |
| Capacity Che   | cks                        |                          |                        |  | Capacity  | y Ch   |            |  |  |                |  |  |  |
|  | Actual                     | Ca                       | apacity                | LOS F?   |   |  | Actual     |  | pacity                                       | LOS F          |  |  |  |
|  |                            |                          |                        |  | V <sub>F</sub>  |  | 2690       | Exhibit 25-1                           | 4 6780                                       | No             |  |  |  |
| V <sub>FO</sub>  |                            | Exhibit 25-7             |                        |  | $V_{FO} = V_{F}$  | - V <sub>R</sub>   | 2456       | Exhibit 25-1                           | 4 6780                                       | No             |  |  |  |
|  |                            |                          |                        |  | $V_R$   |  | 234        | Exhibit 25-3                           | 3 2100                                       | No             |  |  |  |
| Flow Entering  | n Merge In                 | fluence A                | rea                    |  | Flow En   | terir  | ng Dive    | rge Influen                            | ce Area                                      |                |  |  |  |
|  | Actual                     | 1                        | Desirable              | Violation?   |   |  |            | Max Desiral                            |  | Violation      |  |  |  |
| $V_{R12}$  |                            | Exhibit 25-7             |                        |  | V <sub>12</sub>   |  | 1909       | Exhibit 25-14                          | 4400:All                                     | No             |  |  |  |
| Level of Serv  | ice Detern                 | nination (i              | f not F)               |  | Level of  | Ser  | vice De    | terminatio                             | n (if not l                                  | <del>-</del> ) |  |  |  |
| $D_R = 5.475 + 0.$   | 00734 v <sub>R</sub> +     | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub> |  | [   | D <sub>R</sub> = 4   | 4.252 + 0  | .0086 V <sub>12</sub> - 0.             | .009 L <sub>D</sub>                          |                |  |  |  |
| $D_{R} = (pc/mi/ln)$   |                            |                          |                        |  |   | '.5 <b>(pc</b>   | :/mi/ln)   |  | _  |                |  |  |  |
| LOS = (Exhibit 25-4)   |                            |                          |                        |  |   | D <sub>R</sub> = 17.5 (pc/mi/ln)<br>LOS = B (Exhibit 25-4) |            |  |  |                |  |  |  |
| Speed Determ   |                            |                          |                        |  | Speed D   | •  |            | on                                     |  |                |  |  |  |
| $M_S = $ (Exibit 25)   |                            |                          |                        |  | <del></del>   |  | xhibit 25  |  |  |                |  |  |  |
| o .  | ibit 25-19)                |                          |                        |  | l "   | ,  | n (Exhibit | *                                      |  |                |  |  |  |
|  |                            |                          |                        |  |   | -  | n (Exhibit |  |  |                |  |  |  |
|  | ibit 25-19)<br>ibit 25-14) |                          |                        |  | 1.  | -  | n (Exhibit |  |  |                |  |  |  |
|  |                            |                          |                        |  |   |  |            |  |  |                |  |  |  |

| -   |                            | IVAIAIL                           | S AND RAM  |  |  | 1110  |                      |   |                               |             |  |  |  |
|---|----------------------------|-----------------------------------|--|--|--|---|----------------------|---|-------------------------------|-------------|--|--|--|
|   | nformation                 |                                   |  | Site Infor                                       |  |   |                      |   |                               |             |  |  |  |
| Analyst<br>Agency or Com<br>Date Performed<br>Analysis Time F | d 02/                      | IA<br>/14/12                      | Ji<br>Ji   | ravel Southbound Exit 2W Off NYSDOT 2036 Flyover |  |   |                      |   |                               |             |  |  |  |
| Project Descrip   |                            | ı                                 |  | nalysis Year                                     | 2  | 2030 1  | iyovei               |   |                               |             |  |  |  |
| Inputs  | tion Exit                  |                                   |  |  |  |   |                      |   |                               |             |  |  |  |
| Upstream Adj R  | Ramp                       | Terrain: Leve                     | I  |  |  |   |                      |   | Downstrea<br>Ramp             | m Adj       |  |  |  |
| □ Yes □   | On                         |                                   |  |  |  |   |                      |   | ✓ Yes                         | <b>☑</b> On |  |  |  |
| ☑ No ☐  | Off                        |                                   |  |  |  |   |                      |   | □ No                          | ☐ Off       |  |  |  |
| L <sub>up</sub> = f   | ft                         | S                                 | <sub>FF</sub> = 56.0 mph                         |  | S <sub>FR</sub> = 40                                   | 0.0 mp  | )h                   |   | down                          | 1300 ft     |  |  |  |
| <u>u</u>  | reh/h                      |                                   | Sketch ( show lanes, $L_{A'}L_{D'}V_{R'}V_{f}$ ) |  |  |   |                      |   |                               | 360 veh/h   |  |  |  |
| Conversion  | on to pc/h Ui              | nder Base (                       | Conditions                                       |  | 1  |   |                      |   |                               |             |  |  |  |
| (pc/h) V PHF Terrain %Truck                                   |                            |                                   |  |  | %Rv  | L   | f <sub>HV</sub>      | f <sub>p</sub>                                      | v = V/PHF x f <sub>HV</sub> x |             |  |  |  |
| Freeway   | 5450                       | 0.92                              | Level  | 2  | 0  | 0   | 990                  | 1.00  | 5983                          |             |  |  |  |
| Ramp  | 770                        | 0.92                              | Level  | 2  | 0  | 0.990 1.00                                      |                      | 1.00  | 845                           |             |  |  |  |
| UpStream  |                            |                                   |  |  | <b>_</b>   |   |                      |   |                               |             |  |  |  |
| DownStream  | 360                        | 0.92                              | Level  | 2  | 0  | 0   | 990                  | 1.00<br>Diverge Areas                               | 39                            | 5           |  |  |  |
| Estimatio   | n of v                     | Merge Areas                       |  |  | Estimati   | on c  |                      | Diverge Areas                                       |                               |             |  |  |  |
| Louinado  |                            |                                   |  |  | LStillati  | 011   |                      |   |                               |             |  |  |  |
|   |                            | / <sub>F</sub> (P <sub>FM</sub> ) |  |  |  |   |                      | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> |                               |             |  |  |  |
| L <sub>EQ</sub> =   |                            | uation 25-2 or                    |  |  | L <sub>EQ</sub> = (Equation 25-8 or 25-9)              |   |                      |   |                               |             |  |  |  |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)               |                            |                                   |  |  |  | $P_{FD}$ = 0.572 using Equation (Exhibit 25-12) |                      |   |                               |             |  |  |  |
| V <sub>12</sub> =   | pc/l                       | า                                 |  |  | V <sub>12</sub> = 3782 pc/h                            |   |                      |   |                               |             |  |  |  |
| $V_3$ or $V_{av34}$   | pc/l                       | h (Equation 25                    | 5-4 or 25-5)                                     |  | $V_3$ or $V_{av34}$ 2201 pc/h (Equation 25-15 or 25-16 |   |                      |   |                               |             |  |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> >                      | > 2,700 pc/h?              | es □ No                           |  |  | Is V <sub>3</sub> or V <sub>av3</sub>                  | <sub>14</sub> > 2,7                             | '00 pc/h?            | Tyes  ✓ No  |                               |             |  |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> >                      | > 1.5 * V <sub>12</sub> /2 | es □ No                           |  |  | Is V <sub>3</sub> or V <sub>av3</sub>                  | <sub>4</sub> > 1.5                              | * V <sub>12</sub> /2 | Tyes  ✓ No  |                               |             |  |  |  |
| If Yes,V <sub>12a</sub> =                                     | pc/l                       | n (Equation 25                    | 5-8)   |  | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18)       |   |                      |   |                               |             |  |  |  |
| Capacity  | Checks                     |                                   |  |  | Capacity   |   | ecks                 |   |                               |             |  |  |  |
|   | Actual                     | С                                 | apacity  | LOS F?   |  |   | Actual               | Ca  | pacity                        | LOS F       |  |  |  |
|   |                            | i i                               | · · · ·  | ĺ  | V <sub>F</sub>   |   | 5983                 | Exhibit 25-1  | · ·                           | No          |  |  |  |
| $V_{FO}$  |                            | Exhibit 25-7                      |  |  | $V_{FO} = V_{F}$                                       | - V <sub>D</sub>                                | 5138                 | Exhibit 25-1  |                               | No          |  |  |  |
| 1 10  |                            | Extribit 20 7                     |  |  | V <sub>R</sub>   | ·ĸ  | 845                  | Exhibit 25-3  | <del>-</del>                  | _           |  |  |  |
|   |                            |                                   |  |  | <del>-</del>   |   |                      |   |                               | No          |  |  |  |
| riow Ente   | ring Merge                 |                                   |  | Violation?                                       | riow En  | 1   |                      | rge Influen   |                               | Violation   |  |  |  |
| \/  | Actual                     | Exhibit 25-7                      | Desirable  | Violation?                                       | W  | Actual<br>3782                                  |                      | Max Desirable Exhibit 25-14 4400:All                |                               |             |  |  |  |
| V <sub>R12</sub>  | Yorking Date:              |                                   | if not []  | <u> </u>   | V <sub>12</sub>  |   |                      |   |                               | No          |  |  |  |
|   | Service Deter              |                                   |  |  |  |   |                      | terminatio  |                               | <u> </u>    |  |  |  |
|   | + 0.00734 v <sub>R</sub>   | + 0.0078 V <sub>12</sub> -        | 0.00627 L <sub>A</sub>                           |  |  |   |                      | 0.0086 V <sub>12</sub> - 0.                         | 009 LD                        |             |  |  |  |
| D <sub>R</sub> = (pc/mi/ln)                                   |                            |                                   |  |  |  | $D_R = 34.1 \text{ (pc/mi/ln)}$                 |                      |   |                               |             |  |  |  |
| `   | xhibit 25-4)               |                                   |  |  |  | •   | bit 25-4)            |   |                               |             |  |  |  |
| Speed De  | termination                |                                   |  |  | Speed D  |   |                      |   |                               |             |  |  |  |
| M <sub>S</sub> = (Exil  | bit 25-19)                 |                                   |  |  | . "  | •   | xhibit 25            | *   |                               |             |  |  |  |
| S <sub>R</sub> = mph  | (Exhibit 25-19)            |                                   |  |  | 1  | .9 mpł  | (Exhibit             | 25-19)  |                               |             |  |  |  |
|   | (Exhibit 25-19)            |                                   |  |  | $S_0 = 56$   | .7 mpł  | (Exhibit             | 25-19)  |                               |             |  |  |  |
|   | (Exhibit 25-14)            |                                   |  |  | S = 52.  | .2 mpł  | (Exhibit             | 25-15)  |                               |             |  |  |  |
|   |                            |                                   |  |  |  |   |                      | · · · · · · · · · · · · · · · · · · ·               |                               |             |  |  |  |

| •   |   | IXAIIII                           | S AND RAM  |  |  |   |                 |                            |                               |           |  |  |  |
|---|---|-----------------------------------|--|--|--|---|-----------------|----------------------------|-------------------------------|-----------|--|--|--|
| General In  | formation   |                                   |  | Site Infor   |  |   |                 |                            |                               |           |  |  |  |
| Analyst<br>Agency or Com<br>Date Performed<br>Analysis Time F | 02  | HA<br>/14/12                      | F<br>Ji<br>Ji<br>A   | avel Southbound I-87 Exit 4 SB Off NYSDOT 2036 Flyover |  |   |                 |                            |                               |           |  |  |  |
| Project Descript  | tion Exit 4   |                                   |  | •  |  |   |                 |                            |                               |           |  |  |  |
| Inputs  |   |                                   |  |  |  |   |                 |                            |                               |           |  |  |  |
| Upstream Adj R  | •   | Terrain: Leve                     | ·l   |  |  |   |                 |                            | Downstrea<br>Ramp             | m Adj     |  |  |  |
|   | On  |                                   |  |  |  |   |                 |                            | ✓ Yes                         | ☑ On      |  |  |  |
| ✓ No  | Off   |                                   |  |  |  |   |                 |                            | □ No                          | ☐ Off     |  |  |  |
| L <sub>up</sub> = f   | t   |                                   | <sub>FF</sub> = 56.0 mph   |  | S - 1  | 0 0 mr  | nh              |                            | L <sub>down</sub> =           | 1585 ft   |  |  |  |
| u   | eh/h  |                                   | $S_{FF} = 56.0 \text{ mph}$ $S_{FR} = 40.0 \text{ mph}$ Sketch ( show lanes, $L_{A'}L_{D'}V_{R'}V_{f}$ ) |  |  |   |                 |                            |                               | 700 veh/  |  |  |  |
| Conversion  | on to pc/h U  | nder Base                         | Conditions   |  |  |   |                 |                            |                               |           |  |  |  |
| (pc/h) V PHF Terrain %Truck                                   |   |                                   |  |  | %Rv  |   | $f_{HV}$        | f <sub>p</sub>             | v = V/PHF x f <sub>HV</sub> x |           |  |  |  |
| Freeway   | 5850  | 0.92                              | Level  | 2  | 0  | 0   | .990            | 1.00                       | 6422                          |           |  |  |  |
| Ramp  | 730   | 0.92                              | Level  | 2  | 0  | 0   | .990            | 1.00                       | 801                           |           |  |  |  |
| UpStream<br>DownStream  | 700   | 0.93                              | Lovel  | 5  | 0  | 1   | .976            | 1.00                       | 77                            | າ         |  |  |  |
| Downsteam   | 700   | Merge Areas                       | Level  | 5  | 0  | 0   |                 | L 1.00<br>Diverge Areas    | 11                            |           |  |  |  |
| Estimation  | n of v  | Werge Areas                       |  |  | Estimation of v <sub>12</sub>  |   |                 |                            |                               |           |  |  |  |
|   |   | V <sub>F</sub> (P <sub>FM</sub> ) |  |  |  |   |                 | \/ . (\/ \/                | \D                            |           |  |  |  |
| h   | $V_{12} = V_R + (V_F - V_R)P_{FD}$<br>$L_{FO} = $ (Equation 25-8 or 25-9) |                                   |  |  |  |   |                 |                            |                               |           |  |  |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3)                     |   |                                   |  |  |  | 1 2   |                 |                            |                               |           |  |  |  |
| P <sub>FM</sub> = using Equation (Exhibit 25-5)               |   |                                   |  |  |  | $P_{FD}$ = 0.563 using Equation (Exhibit 25-12)<br>$V_{12}$ = 3963 pc/h |                 |                            |                               |           |  |  |  |
| V <sub>12</sub> =   | pc/   |                                   | . 4 05 5)  |  | V <sub>12</sub> =  |   |                 |                            |                               |           |  |  |  |
| V <sub>3</sub> or V <sub>av34</sub>                           |   | h (Equation 25                    | o-4 or 25-5)   |  | $V_3$ or $V_{av34}$ 2459 pc/h (Equation 25-15 or 25-16 Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\checkmark$ Yes $\checkmark$ No |   |                 |                            |                               |           |  |  |  |
| 0 4,0,1   | 2,700 pc/h? ∏ γ   |                                   |  |  |  |   |                 |                            |                               |           |  |  |  |
|   | · 1.5 * V <sub>12</sub> /2  |                                   | . 0)   |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No<br>If Yes, $V_{12a} = pc/h$ (Equation 25-18)                                  |   |                 |                            |                               |           |  |  |  |
| If Yes,V <sub>12a</sub> =                                     |   | h (Equation 25                    | 9-8)   |  |  |   |                 | oc/n (Equation             | 1 25-18)                      |           |  |  |  |
| Capacity (  | T T   | 1 .                               |  | 1  | Capacity   | y Ch  |                 | 1 .                        |                               | Linns     |  |  |  |
|   | Actual  |                                   | apacity  | LOS F?   | .,,  |   | Actual          |                            | pacity                        | LOS F     |  |  |  |
|   |   |                                   |  |  | V <sub>F</sub>   |   | 6422            | Exhibit 25-1               | -                             | No        |  |  |  |
| V <sub>FO</sub>   |   | Exhibit 25-7                      |  |  | $V_{FO} = V_{F}$   | - V <sub>R</sub>  | 5621            | Exhibit 25-1               | 4 6780                        | No        |  |  |  |
|   |   |                                   |  |  | V <sub>R</sub>   |   | 801             | Exhibit 25-3               | 2100                          | No        |  |  |  |
| Flow Ente   | ring Merge  | Influence A                       | rea  |  | Flow En  | terir   | ng Dive         | rge Influen                | ce Area                       |           |  |  |  |
|   | Actual  | _                                 | Desirable  | Violation?   |  | Actual  |                 | Max Desirable              |                               | Violation |  |  |  |
| V <sub>R12</sub>  |   | Exhibit 25-7                      |  |  | V <sub>12</sub>  |   | 3963            | Exhibit 25-14              | 4400:All                      | No        |  |  |  |
|   | ervice Dete   | •                                 |  |  | Level of   | Ser   | vice De         | terminatio                 | n (if not l                   | =)        |  |  |  |
| $D_{R} = 5.475$   | + 0.00734 v <sub>R</sub>  | + 0.0078 V <sub>12</sub> -        | 0.00627 L <sub>A</sub>   |  |  | $D_R = \frac{1}{4}$   | 4.252 + 0       | .0086 V <sub>12</sub> - 0. | 009 L <sub>D</sub>            |           |  |  |  |
| D <sub>R</sub> = (pc/mi/ln)                                   |   |                                   |  |  |  | 3.9 (pc   | :/mi/ln)        |                            |                               |           |  |  |  |
| LOS = (Exhibit 25-4)  |   |                                   |  |  |  | D <sub>R</sub> = 28.9 (pc/mi/ln)<br>LOS = D (Exhibit 25-4)              |                 |                            |                               |           |  |  |  |
| Speed De  | termination   |                                   |  |  | Speed D  | <u> Deter</u>   | mination at its | on                         |                               |           |  |  |  |
| M <sub>S</sub> = (Exil  | bit 25-19)  |                                   |  |  | D <sub>S</sub> = 0.4   | 435 <b>(</b> E  | xhibit 25       | -19)                       |                               |           |  |  |  |
| , and the second  | (Exhibit 25-19)   |                                   |  |  |  | .9 mpl  | n (Exhibit      | 25-19)                     |                               |           |  |  |  |
|   | (Exhibit 25-19)   |                                   |  |  | 1  | -   | n (Exhibit      |                            |                               |           |  |  |  |
| T   | (Exhibit 25-14)   |                                   |  |  | 1.   | -   | `<br>n (Exhibit |                            |                               |           |  |  |  |
| 17.11   | /   |                                   |  |  | 1  | . المار   | ,               | ,                          |                               |           |  |  |  |

|  |                    | MPS AND                                 | RAMP JUN                            |  |                                    | <u> </u>                                   |                  |                     |  |
|--|--------------------|---|-------------------------------------|--|------------------------------------|--|------------------|---------------------|--|
| General Infor  | mation             |   |                                     | Site Infor                                 | mation                             |  |                  |                     |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioc | 02/1               |   | Jı<br>Jı                            | reeway/Dir of Tr<br>unction<br>urisdiction |                                    | Southbound I-8<br>Exit 4 SB On-R<br>NYSDOT |                  |                     |  |
| Project Description  |                    |   | Α.                                  | nalysis Year                               |                                    | 2036 Flyover                               |                  |                     |  |
| nputs  | LXII T             |   |                                     |  |                                    |  |                  |                     |  |
| Jpstream Adj Ramp  |                    | Terrain: Level                          |                                     |  |                                    |  |                  | Downstre            | eam Adi  |
| ✓ Yes  | 1                  |   |                                     |  |                                    |  |                  | Ramp<br>Yes         | □ On   |
| ■ No     Of  | f                  |   |                                     |  |                                    |  |                  | ✓ No                | Off  |
| - <sub>up</sub> = 1585   | ft                 |   |                                     |  |                                    |  |                  | L <sub>down</sub> = | ft   |
| $v_{\rm u} = 730 \text{ v}$  |                    | S                                       | <sub>F</sub> = 56.0 mph<br>Sketch ( | show lanes, L <sub>A</sub> ,               | $S_{FR} = 4$ $L_{D_t}V_{D_t}V_{t}$ | 0.0 mph                                    |                  | V <sub>D</sub> =    | veh/h  |
| Conversion to  | o pc/h Und         | der Base C                              |                                     | ^  | D K I                              |  |                  |                     |  |
| (pc/h)   | V<br>(Veh/hr)      | PHF                                     | Terrain                             | %Truck                                     | %Rv                                | f <sub>HV</sub>                            | f <sub>p</sub>   | v = V/PH            | F x f <sub>HV</sub> x f <sub>p</sub>           |
| Freeway  | 5100               | 0.92                                    | Level                               | 2  | 0                                  | 0.990                                      | 1.00             |                     | 5599   |
| Ramp   | 700                | 0.93                                    | Level                               | 5  | 0                                  | 0.976                                      | 1.00             |                     | 772  |
| JpStream   | 730                | 0.92                                    | Level                               | 2  | 0                                  | 0.990                                      | 1.00             |                     | 801  |
| DownStream   |                    | Merge Areas                             |                                     |  |                                    |  | Diverge Are      | 20                  |  |
| Estimation of  |                    | ivier ge Areas                          |                                     |  | Estimat                            | ion of v <sub>12</sub>                     | Diverge Are      | as                  |  |
|  |                    | (D )                                    |                                     |  |                                    |  |                  |                     |  |
|  | $V_{12} = V_F$     | • | 25.0 25.0                           |  |                                    | V <sub>12</sub>                            | $= V_R + (V_F -$ | $V_R)P_{FD}$        |  |
| EQ =   |                    | Equation 2                              |                                     |  | L <sub>EQ</sub> =                  |  | (Equation        | 25-8 or 25-         | 9)   |
| r <sub>FM</sub> =  |                    |   | on (Exhibit 25-5)                   | )  | P <sub>FD</sub> =                  |  | using Equ        | ation (Exhibi       | t 25-12)                                       |
| 12 =   | 3420               | •                                       | - 05 4 05                           |  | V <sub>12</sub> =                  |  | pc/h             |                     |  |
| or V <sub>av34</sub>   | 5)                 | pc/h (Equatio                           | n 25-4 or 25-                       |  | $V_3$ or $V_{av34}$                |  |                  | on 25-15 or 2       | 5-16)  |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,70                           |                    | s 🗹 No                                  |                                     |  |                                    | $_{34} > 2,700 \text{ pc/h}^2$             |                  |                     |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5                            | V <sub>12</sub> /2 | s 🗹 No                                  |                                     |  |                                    | $_{34} > 1.5 * V_{12}/2$                   |                  |                     |  |
| Yes,V <sub>12a</sub> =   | pc/h               | (Equation 25-                           | ·8)                                 |  | If Yes,V <sub>12a</sub> =          | :  | pc/h (Equa       | ation 25-18)        | )  |
| Capacity Che   | cks                |   |                                     |  | Capacit                            | y Checks                                   |                  |                     |  |
| •  | Actual             | Ca                                      | pacity                              | LOS F?                                     |                                    | Actu                                       | al               | Capacity            | LOS F  |
|  |                    |   |                                     |  | V <sub>F</sub>                     |  | Exhibit 2        | 25-14               |  |
| $V_{FO}$   | 6371               | Exhibit 25-7                            |                                     | No   | $V_{FO} = V_{F}$                   | - V <sub>R</sub>                           | Exhibit 2        | 25-14               |  |
|  |                    |   |                                     |  | V <sub>R</sub>                     |  | Exhibit          | 25-3                |  |
| Flow Entering  | a Merae In         | fluence A                               | rea                                 |  |                                    | tering Div                                 | erae Influ       | ience Are           | <u></u>  |
|  | Actual             |   | )esirable                           | Violation?                                 |                                    | Actual                                     |                  | esirable            | Violation?                                     |
| V <sub>R12</sub>   | 4192               | Exhibit 25-7                            | 4600:All                            | No   | V <sub>12</sub>                    |  | Exhibit 25-1     | i i                 |  |
| Level of Serv  | ice Deterr         | nination (in                            | not F)                              |  |                                    | Service L                                  |                  |                     | ot F)  |
|  |                    | 0.0078 V <sub>12</sub> - 0.00           |                                     |  | 1                                  | D <sub>R</sub> = 4.252 +                   |                  |                     | <u>,                                      </u> |
| ) <sub>R</sub> = 29.6 (pc  |                    | 14                                      |                                     |  |                                    | c/mi/ln)                                   | 12               | J                   |  |
| OS = D (Exhib  | oit 25-4)          |   |                                     |  |                                    | xhibit 25-4)                               |                  |                     |  |
| Speed Detern   |                    |   |                                     |  | <u> </u>                           | Determina                                  | tion             |                     |  |
| M <sub>S</sub> = 0.474 (Exi  |                    |   |                                     |  |                                    | xhibit 25-19)                              | <del></del>      |                     |  |
| -  | (Exhibit 25-19)    |   |                                     |  |                                    | ph (Exhibit 25-1                           | 9)               |                     |  |
|  | (Exhibit 25-19)    |   |                                     |  | 1                                  | ph (Exhibit 25-1                           |                  |                     |  |
|  | (Exhibit 25-14)    |   |                                     |  | ľ                                  | ph (Exhibit 25 1<br>ph (Exhibit 25-1       | •                |                     |  |
| S = 49.6 mph (   |                    |   |                                     |  |                                    |  |                  |                     |  |

|   |                                     | AMPS AND                          | RAMP JUNG               |   |  | <u> </u>  |                |  |                                       |  |
|---|-------------------------------------|-----------------------------------|-------------------------|---|--|---|----------------|--|---------------------------------------|--|
| General In:   | formation                           |                                   |                         | Site Infor  | mation   |   |                |  |                                       |  |
| Analyst<br>Agency or Comp<br>Date Performed<br>Analysis Time Pe | 02                                  | HA<br>/14/12                      | Ju<br>Ju                | eeway/Dir of Tr<br>nction<br>risdiction<br>nalysis Year | E<br>N   | Southbound I-<br>Exit 5 SB On-F<br>NYSDOT<br>2036 Flyover |                |  |                                       |  |
| Project Descripti   | on Exit 4                           |                                   |                         |   |  |   |                |  |                                       |  |
| Inputs  |                                     | <u> </u>                          |                         |   |  |   |                |  |                                       |  |
| Jpstream Adj Ra   | •                                   | Terrain: Leve                     |                         |   |  |   |                | Downstr<br>Ramp                                  | eam Adj                               |  |
|   | On                                  |                                   |                         |   |  |   |                | ✓ Yes  | □ On                                  |  |
|   | Off                                 |                                   |                         |   |  |   |                | □ No   | ✓ Off                                 |  |
| $J_{u} = ft$ $J_{u} = ve$                                       | h/h                                 | S                                 | FF = 56.0 mph           | show longs I  | S <sub>FR</sub> = 40                               | 0.0 mph   |                | L <sub>down</sub> = V <sub>D</sub> =             | 4700 ft<br>730 veh/h                  |  |
|   |                                     | ndor Paca (                       |                         | show lanes, L <sub>A</sub>                              | L <sub>D</sub> , V <sub>R</sub> , V <sub>f</sub> ) |   |                |  |                                       |  |
|   | 1 to pc/11 0                        | nder Base (                       |                         | Г   | T  | Ι.  | Τ.             |  |                                       |  |
| (pc/h)  | (Veh/hr)                            | PHF                               | Terrain                 | %Truck  | %Rv  | f <sub>HV</sub>   | f <sub>p</sub> | v = V/PH   | IF x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway   | 5400                                | 0.92                              | Level                   | 2   | 0  | 0.990   | 1.00           |  | 5928                                  |  |
| Ramp  | 470                                 | 0.93                              | Level                   | 3   | 0  | 0.985   | 1.00           |  | 513                                   |  |
| UpStream<br>DownStream  | 730                                 | 0.92                              | Level                   | 2   | 0  | 0.990   | 1.00           | -  | 801                                   |  |
| Downsteam   | 730                                 | Merge Areas                       | Level                   | 2   | 0  | 0.990   | Diverge A      | Areas  | 801                                   |  |
|   |                                     |                                   |                         |   | Estimati   | Estimation of v <sub>12</sub>                             |                |  |                                       |  |
|   |                                     | V <sub>F</sub> (P <sub>FM</sub> ) |                         |   |  |   |                |  |                                       |  |
| _   |                                     |                                   | 25 2 or 25 2)           |   |  | V <sub>12</sub>   |                | ' <sub>F</sub> - V <sub>R</sub> )P <sub>FD</sub> |                                       |  |
| -EQ =   |                                     | .75 (Equation                     |                         |   | L <sub>EQ</sub> =                                  |   |                | on 25-8 or 25                                    |                                       |  |
| P <sub>FM</sub> =   |                                     |                                   | on (Exhibit 25-5)       |   | P <sub>FD</sub> =                                  |   | _              | quation (Exhib                                   | it 25-12)                             |  |
| / <sub>12</sub> =   |                                     | pc/h                              | 05 4 05                 |   | V <sub>12</sub> =                                  |   | pc/h           |  |                                       |  |
| $V_3$ or $V_{av34}$   | 2289<br>5)                          | pc/h (Equation                    | on 25-4 or 25-          |   | $V_3$ or $V_{av34}$                                |   | pc/h (Eq       | uation 25-15 or 2                                | 25-16)                                |  |
| Is V <sub>2</sub> or V <sub>2424</sub> >                        | 2,700 pc/h?                         | ∕es ☑ No                          |                         |   | Is V <sub>3</sub> or V <sub>av3</sub>              | 4 > 2,700 pc/h  | ?  ☐ Yes       | ☐ No   |                                       |  |
|   | 1.5 * V <sub>12</sub> /2            |                                   |                         |   | Is V <sub>3</sub> or V <sub>av3</sub>              | <sub>4</sub> > 1.5 * V <sub>12</sub> /2                   | ☐ Yes          | ☐ No   |                                       |  |
| f Yes,V <sub>12a</sub> =  | · <del>-</del>                      | h (Equation 25                    | -8)                     |   | If Yes,V <sub>12a</sub> =                          |   | pc/h (E        | quation 25-18                                    | )                                     |  |
| Capacity C  |                                     | (_qua.io                          | 3)                      |   | Capacity   | / Checks  |                |  |                                       |  |
| supuony c   | Actual                              | C                                 | apacity                 | LOS F?  | Joupaon  | Actu  | ıal            | Capacity   | LOS F                                 |  |
|   |                                     | i                                 |                         |   | V <sub>F</sub>                                     | - 133   |                | bit 25-14  |                                       |  |
| $V_{FO}$  | 6441                                | Exhibit 25-7                      |                         | No  | $V_{FO} = V_{F}$                                   | · \/_   |                | bit 25-14  |                                       |  |
| * FO  | 0441                                | LAIIIDIC 25-7                     |                         | INO   |  | *R  |                |  | _                                     |  |
|   | · • • • • • • • • • • • • • • • • • | / f/ A                            |                         |   | V <sub>R</sub>                                     | (   |                | bit 25-3   |                                       |  |
| -iow Enter  | Actual                              | Influence A                       | <b>rea</b><br>Desirable | Violation?  | FIOW En  | Actual  |                | fluence Are<br>x Desirable                       | Violation?                            |  |
| V   | 4152                                | Exhibit 25-7                      | 4600:All                | No No   | V <sub>12</sub>                                    | Aciuai  | Exhibit 2      |  | violation?                            |  |
| V <sub>R12</sub>  |                                     | rmination (                       |                         | INU   |  | Service   |                | nation (if n                                     | ot <b>E</b> )                         |  |
|   |                                     | + 0.0078 V <sub>12</sub> - 0.0    |                         |   |  |   |                | / <sub>12</sub> - 0.009 L <sub>D</sub>           | ur)                                   |  |
| •                         | (pc/mi/ln)                          | 10.0070 12 - 0.0                  | A A                     |   |  |   | - U.UUOU \     | 12 - 0.009 LD                                    |                                       |  |
| IX  | (pc/m/m)<br>(xhibit 25-4)           |                                   |                         |   |  | c/mi/ln)<br>xhibit 25-4)                                  |                |  |                                       |  |
|   | ermination                          |                                   |                         |   | `  | etermina  | tion           |  |                                       |  |
| •   |                                     |                                   |                         |   | <del></del>  | (hibit 25-19)   | aon            |  |                                       |  |
| 3   | (Exibit 25-19)                      | 2)                                |                         |   |  |   | 10)            |  |                                       |  |
| ••  | ph (Exhibit 25-19                   |                                   |                         |   | I ''   | h (Exhibit 25-  |                |  |                                       |  |
| i – 10 6 m  | ph (Exhibit 25-19                   | 7)                                |                         |   | $S_0 = mp$   | h (Exhibit 25-  | 19)            |  |                                       |  |
| U   | ph (Exhibit 25-1                    | -                                 |                         |   | S = mp   | h (Exhibit 25-  | 4.5\           |  |                                       |  |

|  |  |                              | FREEWA                 | Y WEAV   | ING WOR  | RKSHEE         | T               |   |              |  |
|--|--|------------------------------|------------------------|----------|--|----------------|-----------------|---|--------------|--|
| Genera   | l Informat   | ion                          |                        |          | Site Info  | rmation        |                 |   |              |  |
| Analyst<br>Agency/Co<br>Date Perfor<br>Analysis Ti | med  | SEB<br>CHA<br>02/14/<br>AM   | 12                     |          | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | g Location     | Exit 2<br>NYSD  | I-87 Northbound<br>Exit 2E on to 2W off<br>NYSDOT<br>2036 Flyover |              |  |
| Inputs   |  |                              |                        |          |  |                |                 |   |              |  |
| Weaving no   | ee-flow speed, and spe | 11                           | 56<br>4<br>815<br>Leve |          | Weaving type<br>Volume ratio<br>Weaving ratio              | , VR           |                 | 27<br>32  |              |  |
| Conver   | sions to p   | c/h Unde                     | r Base C               | ondition |  |                |                 |   |              |  |
| (pc/h)   | V  | PHF                          | Truck %                | RV %     | E <sub>T</sub>   | E <sub>R</sub> | f <sub>HV</sub> | fp  | ٧            |  |
| $V_{o1}$   | 2780   | 0.92                         | 2                      | 0        | 1.5  | 1.2            | 0.990           | 1.00  | 3051         |  |
| $V_{o2}$   | 0  | 0.92                         | 2                      | 0        | 1.5  | 1.2            | 0.990           | 1.00  | 0            |  |
| $V_{w1}$   | 690  | 0.92                         | 2                      | 0        | 1.5  | 1.2            | 0.990           | 1.00  | 757          |  |
| $V_{w2}$   | 320  | 0.92                         | 2                      | 0        | 1.5  | 1.2            | 0.990           | 1.00  | 351          |  |
| $V_{\rm w}$  |  |                              | •                      | 1108     | V <sub>nw</sub>  |                | •               | •   | 3051         |  |
| V  | 7  |                              |                        |          |  | 1              |                 |   | 4159         |  |
| Weavin   | g and No   | n-Weavin                     | g Speeds               | <b>S</b> |  |                |                 |   |              |  |
|  |  |                              | Unconstr               | 4        |  |                |                 | trained   |              |  |
| o /Evhibit 2                                       | 4 ()   | Weaving<br>0.15              | <u> </u>               |          | ving (i = nw)  | Weavir         | ng (i = w)      | Non-Wea   | ving ( = nw) |  |
| a (Exhibit 2<br>b (Exhibit 2                       |  | 2.20                         |                        |          | 035<br>00  |                |                 |   |              |  |
| c (Exhibit 2                                       |  | 0.97                         |                        |          | 30   |                |                 | <del>                                     </del>                  |              |  |
| d (Exhibit 2                                       |  | 0.80                         | )                      | <u> </u> | 75   |                |                 |   |              |  |
| Weaving intensive                                  |  | 1.00                         |                        |          | 49   |                |                 |   |              |  |
| speeds, Si (mi/                                    | h)   | 38.0                         |                        |          | .81  |                |                 |   |              |  |
| Maximum r  | lanes required<br>number of lanes If Nw < Nw   | s, Nw (max)<br>(max) unconst | rained operati         | ion      |  |                | v (max) constr  | rained operati  | on           |  |
| Weavin   | g Segmer   | nt Speed,                    | Density,               |          | Service,   | and Cap        | acity           |   |              |  |
|  | egment speed,  |                              |                        | 43.44    |  |                |                 |   |              |  |
|  | egment density   | , D (pc/mi/ln)               |                        | 23.94    |  |                |                 |   |              |  |
| Level of se  |  | , "                          |                        | С        |  |                |                 |   |              |  |
|  | base condition   |                              | 11.3                   | 6375     |  |                |                 |   |              |  |
|  | a 15-minute fl   |                              |                        | 6312     |  |                |                 |   |              |  |
|  | a full-hour vol  | ume, c <sub>h</sub> (veh/h   | )                      | 5807     |  |                |                 |   |              |  |
| Notes  |  |                              |                        |          |  |                |                 |   |              |  |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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HCS+TM Version 5.3

b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  |  |                            | FREEWA                | Y WEAV  | /ING WOR   | KSHEE          | Т              |   |              |  |
|--|--|----------------------------|-----------------------|---------|--|----------------|----------------|---|--------------|--|
| Genera   | l Informat   | ion                        |                       |         | Site Info  | rmation        |                |   |              |  |
| Analyst<br>Agency/Cor<br>Date Perfor<br>Analysis Tir | med  | SEB<br>CHA<br>02/14/<br>AM | 12                    |         | Freeway/Dir of Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | Exit 2<br>NYSE | I-87 Southbound<br>Exit 2W on to 2E off<br>NYSDOT<br>2036 Flyover |              |  |
| Inputs   |  |                            |                       |         |  |                |                |   |              |  |
| Weaving nu<br>Weaving se<br>Terrain                  | ee-flow speed, and spe | N                          | 56<br>4<br>810<br>Lev | el      | Weaving type<br>Volume ratio,<br>Weaving ratio             | VR             |                | A<br>0.2<br>0.3   |              |  |
| Conver   | sions to p   | c/h Unde                   | r Base C              | onditio |  |                | 1              | 1   | 1            |  |
| (pc/h)   | V  | PHF                        | Truck %               | RV %    | E <sub>T</sub>   | E <sub>R</sub> | $f_{HV}$       | fp  | V            |  |
| $V_{o1}$   | 3910   | 0.92                       | 2                     | 0       | 1.5  | 1.2            | 0.990          | 1.00  | 4292         |  |
| $V_{02}$   | 0  | 0.92                       | 2                     | 0       | 1.5  | 1.2            | 0.990          | 1.00  | 0            |  |
| V <sub>w1</sub>                                      | 790  | 0.92                       | 2                     | 0       | 1.5  | 1.2            | 0.990          | 1.00  | 867          |  |
| $V_{w2}$   | 360  | 0.92                       | 2                     | 0       | 1.5  | 1.2            | 0.990          | 1.00  | 395          |  |
| V <sub>w</sub>                                       | 1  |                            |                       | 1262    | V <sub>nw</sub>  |                |                | ,   | 4292         |  |
| V  |  |                            |                       |         |  |                |                |   | 5554         |  |
| Weavin   | g and No   | n-Weavin                   | g Speeds              | 3       |  |                |                |   |              |  |
|  |  |                            | Unconstr              |         |  |                |                | trained   |              |  |
| - /F. H.H. 1. 0                                      | 4 ()   | Weaving                    |                       |         | aving (i = nw)   | Weavi          | ng (i = w)     | Non-Wea   | ving ( = nw) |  |
| a (Exhibit 24<br>b (Exhibit 24                       |  | 0.15<br>2.20               |                       | 1       | 0035   |                |                |   |              |  |
| c (Exhibit 24  |  | 0.97                       |                       | !       | .30  |                |                |   |              |  |
| d (Exhibit 2   |  | 0.80                       |                       |         | 0.75   |                |                |   |              |  |
| Weaving intens                                       |  | 1.24                       |                       | C       | 0.64   |                |                |   |              |  |
| Weaving and no<br>speeds, Si (mi/l                   |  | 35.5                       | 4                     | 43      | 3.11   |                |                |   |              |  |
| Number of I<br>Maximum n                             | anes required umber of lanes  If Nw < Nw   | s, Nw (max)                |                       |         | 1.27<br>1.40   | if Nw > N      | v (max) consti | rained aperati  | on           |  |
|  |  | <u> </u>                   | <u> </u>              |         | f Service,   |                |                | ameu operati  | UII          |  |
|  | gment speed,   |                            | Definity,             | 41.12   | i Joi viog,  | una vap        | Jaoney         |   |              |  |
|  | gment density,   |                            |                       | 33.77   |  |                |                |   |              |  |
| Level of ser   |  | ч /                        |                       | D       |  |                |                |   |              |  |
| Capacity of  | Capacity of base condition, c <sub>h</sub> (pc/h)  |                            |                       | 6585    |  |                |                |   |              |  |
|  | a 15-minute fl   | <u> </u>                   | ı/h)                  | 6520    |  |                |                |   |              |  |
|  | a full-hour vol  |                            |                       | 5998    |  |                |                |   |              |  |
| Notes  |  | .1                         |                       |         |  |                |                |   |              |  |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

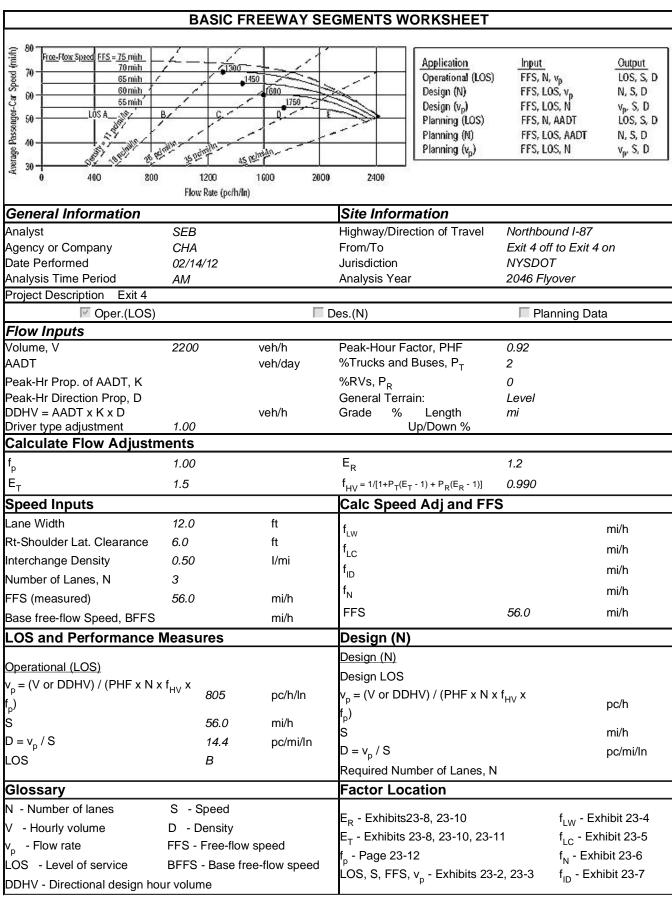
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

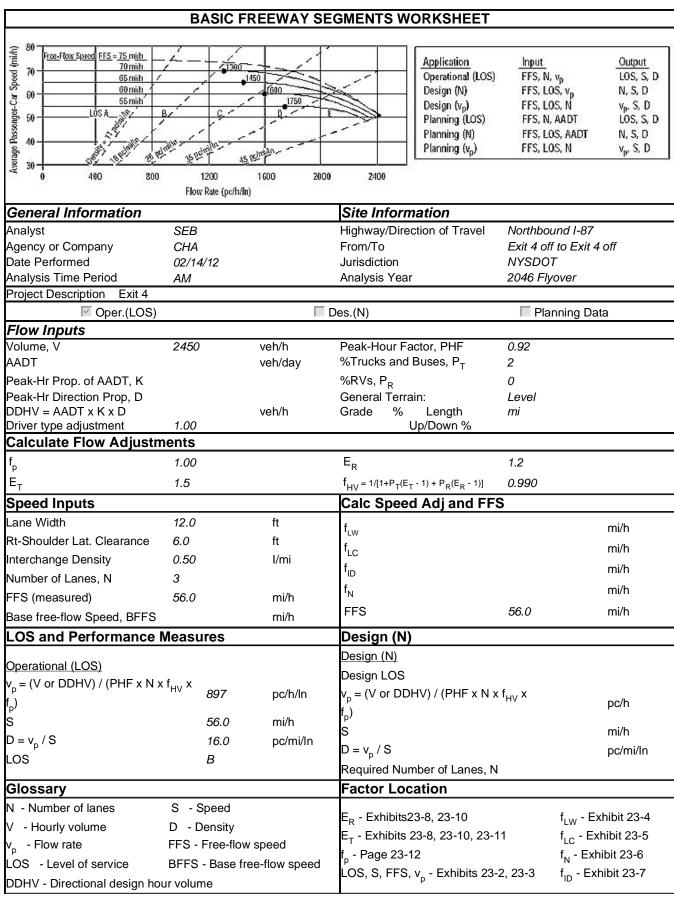
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such



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|  | BASIC F   | REEWAY SE                                      | EGMENTS W  | ORKSHEET   |  |   |
|--|---|--|--|--|--|---|
| 80 Free-Flow Speed FFS = 75 migh 70 mish 65 mish 60 mish 55 mish 60 mi | B C   | 150 (600 1750 1750 1750 1750 1750 1750 1750 17 | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO<br>FFS, LO<br>FFS, LO<br>FFS, LO | S, V <sub>p</sub> N, S, D<br>S, N V <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D            |
| General Information  | Flow Rate (pc/h/lin                                   | )  | Site Inforn  | nation   |  |   |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period   | SEB<br>CHA<br>02/14/12<br>AM                          |  |  | ection of Travel   | Southboo<br>Exit 4 off<br>NYSDOT<br>2046 Fly                 | to Exit 4 on  |
| Project Description Exit 4  Oper.(LOS)   |   | П  | Des.(N)  |  | □ Plar   | nning Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D  | 5100  | veh/h<br>veh/day<br>veh/h                      | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade %      | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi                                |   |
| Driver type adjustment  Calculate Flow Adjustr   | 1.00<br>nents   | Verifit  |  | Up/Down %  |  |   |
| f <sub>p</sub>   | 1.00  |  | E <sub>R</sub>   |  | 1.2  |   |
| E <sub>T</sub>   | 1.5   |  | • •  | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |   |
| Speed Inputs   |   |  | Calc Spee  | d Adj and FFS  | 3  |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>3<br>56.0                      | ft<br>ft<br>I/mi<br>mi/h                       | $f_{LW}$ $f_{LC}$ $f_{ID}$   |  |  | mi/h<br>mi/h<br>mi/h<br>mi/h  |
| Base free-flow Speed, BFFS   |   | mi/h   | FFS  |  | 56.0   | mi/h  |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_p)$ S $D = v_p / S$ LOS   |   | pc/h/ln<br>mi/h<br>pc/mi/ln                    | $f_p$ )<br>S<br>D = $v_p / S$  | )<br>OHV) / (PHF x N x<br>mber of Lanes, N   | f <sub>HV</sub> x  | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |   |  | Factor Loc   |  |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fro |  | E <sub>R</sub> - Exhibits2<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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|  | BASIC F   | REEWAY SE                           | EGMENTS W   | ORKSHEET  |  |  |
|--|---|-------------------------------------|---|---|--|--|
| Wassender Car Speed FFS = 75 mith 70 mith 70 mith 65 mith 60 mith 55 mith 55 mith 60 mith 65 m | B. C.   | 1450<br>1600<br>1750<br>1600<br>200 | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> )  | Input<br>FFS, N, V <sub>p</sub><br>FFS, LOS, V<br>FFS, LOS, I<br>FFS, N, AA<br>FFS, LOS, I | v <sub>p</sub> , S, D<br>DT LOS, S, D<br>AADT N, S, D  |
| General Information  | Those Note (permis                                    | "7                                  | Site Infori   | mation  |  |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/14/12<br>PM                          |                                     | -   | ection of Travel  | Northbound<br>Exit 2 to Ex<br>NYSDOT<br>2016 Flyov   | it 4   |
| ✓ Oper.(LOS)   |   |                                     | Des.(N)   |   | ☐ Planni   | ng Data  |
| Flow Inputs  Volume, V  AADT  Peak-Hr Prop. of AADT, K  Peak-Hr Direction Prop, D  DDHV = AADT x K x D   | 5500  | veh/h<br>veh/day<br>veh/h           | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terr<br>Grade % | d Buses, P <sub>T</sub> rain: Length  | 0.86<br>2<br>0<br>Level<br>mi  |  |
| Driver type adjustment  Calculate Flow Adjustr   | 1.00  |                                     |   | Up/Down %   |  |  |
| <u> </u>   | 1.00  |                                     | E <sub>R</sub>  |   | 1.2  |  |
| f <sub>p</sub><br>E <sub>T</sub>   | 1.50  |                                     | • •   | = 1)  | 0.990  |  |
| Speed Inputs   | 1.5   |                                     |   | ed Adj and FFS  |  |  |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>3<br>56.0                      | ft<br>ft<br>I/mi<br>mi/h            | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS            | a rajuna i i e  | 56.0   | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h   |
| Base free-flow Speed, BFFS   |   | mi/h                                |   |   |  |  |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ S $D = v_p / S$ LOS  |   | pc/h/ln<br>mi/h<br>pc/mi/ln         | $f_p$ )<br>S<br>D = $v_p$ / S   | DHV) / (PHF x N x the sum of the | f <sub>HV</sub> x  | pc/h<br>mi/h<br>pc/mi/ln   |
| Glossary   |   |                                     | Factor Lo   |   |  |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base for |                                     | $E_R$ - Exhibits<br>$E_T$ - Exhibits<br>$f_p$ - Page 23-                      | 23-8, 23-10<br>23-8, 23-10, 23-1  | 1 f <sub>L</sub>   | <sub>W</sub> - Exhibit 23-4<br><sub>C</sub> - Exhibit 23-5<br><sub>A</sub> - Exhibit 23-6<br><sub>D</sub> - Exhibit 23-7 |
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|  | BASIC F               | REEWAY SE                                     | GMENTS W                   | ORKSHEET   |   |   |
|--|-----------------------|---|----------------------------|--|---|---|
| 80 Free-Flow Spzed FFS = 75 mith 70 mith 70 mith 65 mith 55 mith 55 mith 65 mi | B C C                 | 150 (500 1750 1750 1750 1750 1750 1750 1750 1 | 2400                       | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input FFS, N, Vp FFS, LOS, FFS, LOS, FFS, N, AA FFS, LOS, FFS, LOS, | N V <sub>P</sub> , S, D<br>DT LOS, S, D<br>AADT N, S, D |
| General Information  | Flow Rate (pc/h/lin   | )   | Site Inform                | nation   |   |   |
| Analyst  | SEB                   |   |                            | ection of Travel   | Southbound  | d I-87  |
| Agency or Company  | CHA                   |   | From/To                    | cuon or maver  | Exit 4 to Ex  |   |
| Date Performed   | 02/14/12              |   | Jurisdiction               |  | NYSDOT  |   |
| Analysis Time Period   | PM                    |   | Analysis Yea               | r  | 2016 Flyov  | er  |
| Project Description Exit 4   |                       |   |                            |  |   |   |
| Oper.(LOS)   |                       |   | Des.(N)                    |  | ☐ Planni  | ng Data   |
| Flow Inputs  |                       |   |                            |  |   |   |
| Volume, V  | 3900                  | veh/h   | Peak-Hour Fa               |  | 0.92  |   |
| AADT   |                       | veh/day                                       | %Trucks and                | Buses, P <sub>T</sub>  | 2   |   |
| Peak-Hr Prop. of AADT, K   |                       |   | %RVs, P <sub>R</sub>       |  | 0   |   |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D   |                       | veh/h   | General Terra              |  | Level   |   |
| Driver type adjustment   | 1.00                  | ven/n   | Grade %                    | Length<br>Up/Down %  | mi  |   |
| Calculate Flow Adjustr   |                       |   |                            | оргин 70   |   |   |
| f <sub>p</sub>   | 1.00                  |   | E <sub>R</sub>             |  | 1.2   |   |
| E <sub>T</sub>   | 1.5                   |   |                            | 1) . D /E 1)]  | 0.990   |   |
|  | 1.5                   |   |                            | $T - 1 + P_R(E_R - 1)$   |   |   |
| Speed Inputs   | 40.0                  |   | Caic Spee                  | d Adj and FFS  | )   |   |
| Lane Width   | 12.0                  | ft  | $f_{LW}$                   |  |   | mi/h  |
| Rt-Shoulder Lat. Clearance   | 6.0                   | ft  | f <sub>LC</sub>            |  |   | mi/h  |
| Interchange Density  | 0.50                  | l/mi  | f <sub>ID</sub>            |  |   | mi/h  |
| Number of Lanes, N   | 3                     |   | f                          |  |   | mi/h  |
| FFS (measured)   | 56.0                  | mi/h  | 'N                         |  |   |   |
| Base free-flow Speed, BFFS   |                       | mi/h  | FFS                        |  | 56.0  | mi/h  |
| LOS and Performance  | Measures              |   | Design (N)                 | )  |   |   |
| On anational (LOC)   |                       |   | Design (N)                 |  |   |   |
| Operational (LOS)  | v f v                 |   | Design LOS                 |  |   |   |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$  | 1427 1427             | pc/h/ln                                       | $v_p = (V \text{ or } DD)$ | HV) / (PHF x N x   | f <sub>HV</sub> x   | //-   |
| f <sub>p</sub> )   |                       | . /-  | f <sub>p</sub> )           |  |   | pc/h  |
| S  | 56.0                  | mi/h  | s                          |  |   | mi/h  |
| $D = v_p / S$  | 25.5                  | pc/mi/ln                                      | $D = v_p / S$              |  |   | pc/mi/ln  |
| LOS  | С                     |   | F                          | mber of Lanes, N   |   | I- 20   |
| <br>Glossary   |                       |   | Factor Loc                 |  |   |   |
| N - Number of lanes  | S - Speed             |   | 1 43131 200                |  |   |   |
| V - Hourly volume  | D - Density           |   | E <sub>R</sub> - Exhibits2 | 23-8, 23-10  | f <sub>l</sub>  | <sub>.W</sub> - Exhibit 23-4                            |
| I  |                       | , sneed                                       | $E_T$ - Exhibits           | 23-8, 23-10, 23-1  | 1 f <sub>l</sub>  | <sub>-C</sub> - Exhibit 23-5                            |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow       |   | f <sub>p</sub> - Page 23-  | 12   | -   | - Exhibit 23-6  |
| LOS - Level of service   | BFFS - Base fr        | ee-flow speed                                 | P                          | , v <sub>p</sub> - Exhibits 23-2   |   | D - Exhibit 23-7  |
| DDHV - Directional design ho   | our volume            |   |                            | <u>'</u>   | I   |   |
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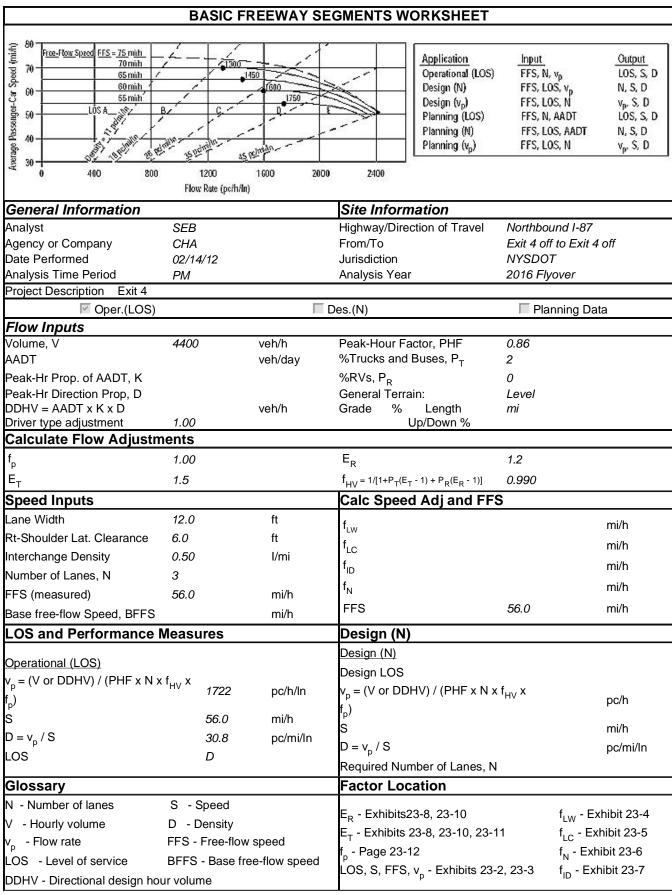
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|  | BASIC F  | REEWAY SE                                      | EGMENTS W   | ORKSHEET   |  |   |
|--|--|--|---|--|--|---|
| 80 Free-Flow Speed FFS = 75 migh 70 mish 65 mish 60 mish 55 mish 60 mi | B C C  | 150 (600 1750 1750 1750 1750 1750 1750 1750 17 | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO<br>FFS, LO<br>FFS, LO<br>FFS, LO | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D            |
| General Information  | Flow Rate (pc/h/lin                                    | )  | Site Inforn   | nation   |  |   |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period   | SEB<br>CHA<br>02/14/12<br>PM                           |  |   | ction of Travel  | Northbou<br>Exit 4 off<br>NYSDOT<br>2016 Fly                 | to Exit 4 on  |
| Project Description Exit 4  Oper.(LOS)   |  | П  | Des.(N)   |  | □ Plar   | nning Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D  | 4300   | veh/h<br>veh/day<br>veh/h                      | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade % | Buses, P <sub>T</sub>  | 0.86<br>2<br>0<br>Level<br>mi                                |   |
| Driver type adjustment  Calculate Flow Adjustr   | 1.00<br><b>nents</b>                                   | Venin  |   | Length<br>Up/Down %  | 1111   |   |
| fp   | 1.00   |  | E <sub>R</sub>  |  | 1.2  |   |
| E <sub>T</sub>   | 1.5  |  | f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E  | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |   |
| Speed Inputs   |  |  | Calc Spee   | d Adj and FFS  | 6  |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>3<br>56.0                       | ft<br>ft<br>I/mi<br>mi/h                       | $f_{LW}$ $f_{LC}$ $f_{ID}$  |  |  | mi/h<br>mi/h<br>mi/h<br>mi/h  |
| Base free-flow Speed, BFFS   |  | mi/h   | FFS   |  | 56.0   | mi/h  |
| LOS and Performance  | Measures   |  | Design (N)  | )  |  |   |
| Operational (LOS)  V <sub>p</sub> = (V or DDHV) / (PHF x N : f <sub>p</sub> ) S  | 56.0   | pc/h/ln<br>mi/h                                | <u>Design (N)</u><br>Design LOS   | HV) / (PHF x N x   | f <sub>HV</sub> x  | pc/h<br>mi/h  |
| D = v <sub>p</sub> / S<br>LOS  | 30.1<br>D  | pc/mi/ln                                       | D = v <sub>p</sub> / S<br>Required Nu   | mber of Lanes, N   |  | pc/mi/ln  |
| Glossary   |  |  | Factor Loc  | cation   |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service  | S - Speed D - Density FFS - Free-flow BFFS - Base free |  | f <sub>p</sub> - Page 23-   | 23-8, 23-10, 23-1  |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design ho   |  |  |   | Version 5.3  |  | nerated: 2/15/2012 2:31   |

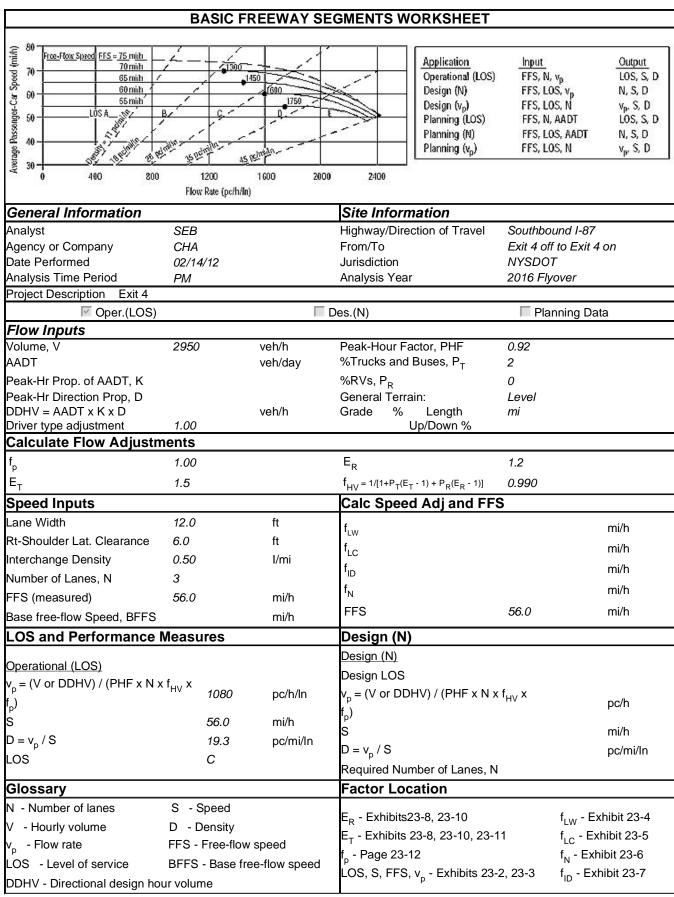
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|  | BASIC F  | REEWAY SE                   | EGMENTS W   | ORKSHEET   |   |  |
|--|--|-----------------------------|---|--|---|--|
| Wassengle Passengle  C C  | 1600 200                    | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input FFS, N, vp FFS, LOS, vp FFS, LOS, N FFS, N, AADT FFS, LOS, AA FFS, LOS, N |  |
| General Information  | now wate (pontini                                    | V.                          | Site Inform   | mation   |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/14/12<br>PM                         |                             |   | ection of Travel   | Northbound I<br>Exit 4 to Exit<br>NYSDOT<br>2016 Flyover                        |  |
| Oper.(LOS)   |  |                             | Des.(N)   |  | ☐ Planning  | Data   |
| Flow Inputs  Volume, V  AADT  Peak-Hr Prop. of AADT, K  Peak-Hr Direction Prop, D  DDHV = AADT x K x D   | 5900   | veh/h<br>veh/day<br>veh/h   | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade %     | I Buses, P <sub>T</sub> ain: Length  | 0.86<br>2<br>0<br>Level<br>mi   |  |
| Driver type adjustment  Calculate Flow Adjustr   | 1.00<br>nents  |                             |   | Up/Down %  |   |  |
| f <sub>p</sub>   | 1.00   |                             | E <sub>R</sub>  |  | 1.2   |  |
| E <sub>T</sub>   | 1.5  |                             |   | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990   |  |
| Speed Inputs   |  |                             |   | d Adj and FFS  |   |  |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>4<br>56.0                     | ft<br>ft<br>I/mi<br>mi/h    | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS                  |  | 56.0  | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h                               |
| Base free-flow Speed, BFFS   | Magaziras  | mi/h                        |   | \  |   |  |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p)$ $S$ $D = v_p / S$ LOS   |  | pc/h/ln<br>mi/h<br>pc/mi/ln | $f_p$ )<br>S<br>D = $v_p$ / S   | DHV) / (PHF x N x mber of Lanes, N   | f <sub>HV</sub> x   | pc/h<br>mi/h<br>pc/mi/ln   |
| Glossary   |  |                             | Factor Lo   |  |   |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fr |                             | E <sub>R</sub> - Exhibits<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1 f <sub>LC</sub>   | - Exhibit 23-4<br>- Exhibit 23-5<br>Exhibit 23-6<br>- Exhibit 23-7 |
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|  | BASIC F             | REEWAY SE   | EGMENTS W                  | ORKSHEET   |  |  |
|--|---------------------|---|----------------------------|--|--|--|
| 80 Froe-Flow Speed FFS = 75 mith 70 mith 70 mith 65 mith 55 mith 55 mith 60 mith 75 mi | B C C S             | 1450<br>(600<br>1750<br>0<br>1600<br>1600<br>2001 | 0 2400                     | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS<br>FFS, LOS | , v <sub>p</sub> N, S, D<br>, N v <sub>p</sub> , S, D<br>, ADT LOS, S, D<br>, AADT N, S, D |
| General Information  | Flow Rate (pc/h/lir | 1)  | Site Inform                | nation   |  |  |
| Analyst  | SEB                 |   |                            | ction of Travel  | Southbou   | nd I-87  |
| Agency or Company  | CHA                 |   | From/To                    | ollon of maron   | Exit 5 to E  |  |
| Date Performed   | 02/14/12            |   | Jurisdiction               |  | NYSDOT   |  |
| Analysis Time Period   | PM                  |   | Analysis Year              |  | 2016 Flyd  | ver  |
| Project Description Exit 4   |                     |   |                            |  |  |  |
| Oper.(LOS)   |                     |   | Des.(N)                    |  | ☐ Plan   | ning Data  |
| Flow Inputs Volume, V  | 3650                | veh/h   | Peak-Hour Fa               | otor DUE   | 0.92   |  |
| AADT   | 3030                | ven/n<br>veh/day                                  | %Trucks and                | •  | 2  |  |
| Peak-Hr Prop. of AADT, K   |                     | vorwaay   | %RVs, P <sub>R</sub>       | 2 4 6 6 6 7 1  | 0  |  |
| Peak-Hr Direction Prop, D  |                     |   | General Terra              | nin:   | Level  |  |
| DDHV = AADT x K x D  |                     | veh/h   | Grade %                    | Length   | mi   |  |
| Driver type adjustment   | 1.00                |   | l                          | Jp/Down %  |  |  |
| Calculate Flow Adjustr   | nents               |   |                            |  |  |  |
| $f_p$  | 1.00                |   | $E_R$                      |  | 1.2  |  |
| E <sub>T</sub>   | 1.5                 |   | $f_{HV} = 1/[1+P_T(E_T)]$  | 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |  |
| Speed Inputs   |                     |   | Calc Speed                 | d Adj and FFS  | }  |  |
| Lane Width   | 12.0                | ft  |                            | -  |  | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0                 | ft  | f <sub>LW</sub>            |  |  |  |
| Interchange Density  | 0.50                | I/mi  | f <sub>LC</sub>            |  |  | mi/h   |
| Number of Lanes, N   | 3                   |   | $f_ID$                     |  |  | mi/h   |
| FFS (measured)   | 56.0                | mi/h  | $f_N$                      |  |  | mi/h   |
| Base free-flow Speed, BFFS   | 00.0                | mi/h  | FFS                        |  | 56.0   | mi/h   |
| LOS and Performance  | Moseuros            | 1111/11   | Dosign (N)                 |  |  |  |
| LOS and Feriormance  | Weasures            |   | Design (N)  Design (N)     |  |  |  |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N   | x f <sub>HV</sub> x |   | Design LOS                 |  |  |  |
| f <sub>p</sub> )   | <sup>nv</sup> 1336  | pc/h/ln   | . 5.                       | HV) / (PHF x N x   | r <sub>HV</sub> x  | pc/h   |
| S  | 56.0                | mi/h  | f <sub>p</sub> )           |  |  | - "  |
| $D = v_p / S$  | 23.9                | pc/mi/ln  | S                          |  |  | mi/h   |
| LOS  | С                   | ·   | $D = v_p / S$              |  |  | pc/mi/ln   |
|  | -                   |   |                            | nber of Lanes, N   |  |  |
| Glossary   |                     |   | Factor Loc                 | ation  |  |  |
| N - Number of lanes  | S - Speed           |   | E <sub>R</sub> - Exhibits2 | 23-8, 23-10  |  | f <sub>LW</sub> - Exhibit 23-4   |
| V - Hourly volume  | D - Density         |   | 1.7                        | 23-8, 23-10, 23-1 <sup>-1</sup>  |  | f <sub>LC</sub> - Exhibit 23-5   |
| v <sub>p</sub> - Flow rate   | FFS - Free-flov     | v speed   | f <sub>p</sub> - Page 23-1 |  |  | f <sub>N</sub> - Exhibit 23-6  |
| LOS - Level of service   | BFFS - Base fr      | ee-flow speed                                     | F-                         | v <sub>p</sub> - Exhibits 23-2   |  | f <sub>ID</sub> - Exhibit 23-7   |
| DDHV - Directional design ho   | our volume          |   |                            | • <sub>р</sub> Елііріі 20-2  | _,   | ID EXHIBIT 20-1  |
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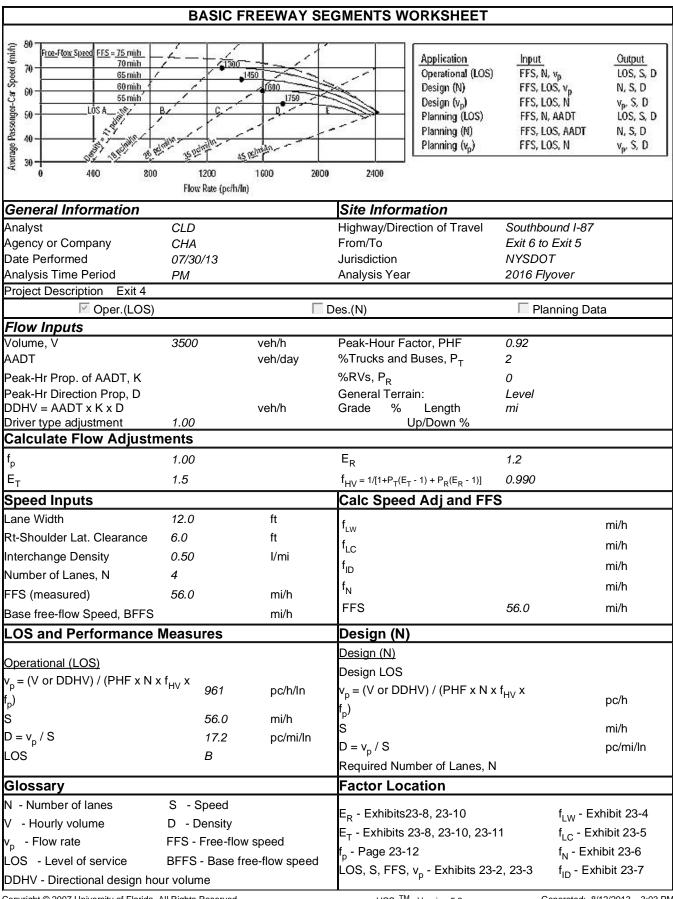
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|  | BASIC FI  | REEWAY SE                | GMENTS W   | ORKSHEET   |   |  |
|--|---|--------------------------|--|--|---|--|
| Free-Flow Speed FFS = 75 mith   70 | B C C   | 50 (600 1750 E           | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AADT FFS, LOS, N | Output<br>LOS, S, D<br>N, S, D<br>V <sub>p</sub> , S, D<br>LOS, S, D<br>N, S, D<br>V <sub>p</sub> , S, D |
| General Information  | Flow Rate (pc/h/lin)  | 3                        | Site Inform  | nation   |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | CLD<br>CHA<br>07/30/13<br>PM                                      |                          |  | ection of Travel   | Northbound I-87<br>Exit 5 to Exit 6<br>NYSDOT<br>2016 Flyover   | 7  |
| ✓ Oper.(LOS)   |   |                          | Des.(N)  |  | ☐ Planning □  | ata  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 6150  | veh/h<br>veh/day         | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra | Buses, P <sub>T</sub>  | 0.86<br>2<br>0<br>Level   |  |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00  | veh/h                    | Grade %  | Length<br>Up/Down %  | mi  |  |
| Calculate Flow Adjustr   |   |                          |  |  | 10  |  |
| f <sub>p</sub>   | 1.00<br>1.5   |                          | E <sub>R</sub>   | 4) . D /E 4)1  | 1.2<br>0.990  |  |
| E <sub>⊤</sub><br>Speed Inputs   | 1.5   |                          |  | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]<br><b>d Adj and FFS</b>   |   |  |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>4<br>56.0                                  | ft<br>ft<br>I/mi<br>mi/h | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub>       | a Aaj ana 11 o   |   | mi/h<br>mi/h<br>mi/h<br>mi/h   |
| Base free-flow Speed, BFFS   | 30.0  | mi/h                     | FFS  |  | 56.0  | mi/h   |
| LOS and Performance  | Measures  | 111//11                  | Design (N)   | <u> </u>   |   |  |
| Operational (LOS)<br>$V_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ S  |   | pc/h/ln<br>mi/h          | <u>Design (N)</u><br>Design LOS                                      | )HV) / (PHF x N x i  | f <sub>HV</sub> x   | pc/h   |
| D = v <sub>p</sub> / S<br>LOS  | 32.3<br>D   | pc/mi/ln                 | $S$ $D = v_p / S$ Required Number 1                                  | mber of Lanes, N   |   | mi/h<br>pc/mi/ln   |
| Glossary   |   |                          | Factor Loc   | cation   |   |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base freedour volume | -                        | f <sub>p</sub> - Page 23-  | 23-8, 23-10, 23-1  | 1 f <sub>LC</sub> - E<br>f <sub>N</sub> - E:  | Exhibit 23-4<br>Exhibit 23-5<br>xhibit 23-6<br>Exhibit 23-7  |
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|                               | RAI                                | MPS AND                       | KAINIP JUIN              | CHONS W  | OKKONE                              | <u></u>                            |                          |                                     |                                |
|-------------------------------|------------------------------------|-------------------------------|--------------------------|--|-------------------------------------|------------------------------------|--------------------------|-------------------------------------|--------------------------------|
| General Infor                 | mation                             |                               |                          | Site Infor                                       | mation                              |                                    |                          |                                     |                                |
| Analyst                       | SEB                                |                               | Fre                      | eeway/Dir of Tra                                 |                                     | Northbound I-8                     | 37                       |                                     |                                |
| gency or Company              | CHA                                |                               |                          | nction   |                                     | Exit 2W On-Ra                      |                          |                                     |                                |
| ate Performed                 | 02/14                              | 4/12                          | Ju                       | risdiction                                       | I                                   | NYSDOT                             | •                        |                                     |                                |
| nalysis Time Period           | l PM                               |                               | An                       | nalysis Year                                     | :                                   | 2016 Flyover                       |                          |                                     |                                |
| Project Description           | Exit 4                             |                               |                          |  |                                     | -                                  |                          |                                     |                                |
| nputs                         |                                    |                               |                          |  |                                     |                                    |                          |                                     |                                |
| Jpstream Adj Ramp             |                                    | Terrain: Level                |                          |  |                                     |                                    |                          | Downstre<br>Ramp                    | eam Adj                        |
| ▼ Yes ☐ On                    |                                    |                               |                          |  |                                     |                                    |                          | ☐ Yes                               | ☐ On                           |
| No                            | f                                  |                               |                          |  |                                     |                                    |                          | ✓ No                                | ☐ Off                          |
| <sub>rup</sub> = 1100         | ft                                 |                               | <sub>-F</sub> = 56.0 mph |  | S <sub>FR</sub> = 4                 | 0 0 mph                            |                          | L <sub>down</sub> =                 | ft                             |
| $V_{\rm u} = 800 \text{ v}$   | eh/h                               | 3                             | •                        | show lanes, L <sub>A</sub> ,                     |                                     | o.o mpn                            |                          | $V_D =$                             | veh/h                          |
| Conversion to                 | o pc/h Und                         | der Base C                    |                          |  |                                     | _                                  |                          |                                     |                                |
| (pc/h)                        | V<br>(Veh/hr)                      | PHF                           | Terrain                  | %Truck   | %Rv                                 | $f_{HV}$                           | fp                       | v = V/PH                            | $F \times f_{HV} \times f_{p}$ |
| reeway                        | 4650                               | 0.86                          | Level                    | 2  | 0                                   | 0.990                              | 1.00                     |                                     | 5461                           |
| Ramp                          | 870                                | 0.92                          | Level                    | 2  | 0                                   | 0.990                              | 1.00                     |                                     | 955                            |
| JpStream                      | 800                                | 0.92                          | Level                    | 2  | 0                                   | 0.990                              | 1.00                     | 1                                   | 878                            |
| DownStream                    |                                    |                               | _2.0.                    | <del>                                     </del> | Ť                                   | 3                                  | 1                        |                                     |                                |
|                               |                                    | Merge Areas                   |                          |  |                                     |                                    | Diverge Are              | eas                                 |                                |
| stimation of                  |                                    |                               |                          |  |                                     |                                    |                          |                                     |                                |
|                               | V <sub>12</sub> = V <sub>F</sub>   | (P <sub>EM</sub> )            |                          |  | <u> </u>                            |                                    |                          | \/ \D                               |                                |
| _                             | 12 1                               |                               | OF 0 ~* OF 0\            |  |                                     | V <sub>12</sub>                    | $= V_R + (V_F)$          |                                     |                                |
| EQ =                          |                                    | (Equation 2                   |                          |  | L <sub>EQ</sub> =                   |                                    | (Equation                | 25-8 or 25-                         | 9)                             |
| FM =                          |                                    |                               | on (Exhibit 25-5)        |  | P <sub>FD</sub> =                   |                                    | using Equ                | uation (Exhibit                     | t 25-12)                       |
| 12 =                          | 3166                               |                               |                          |  | V <sub>12</sub> =                   |                                    | pc/h                     |                                     |                                |
| or V <sub>av34</sub>          |                                    | pc/h (Equatio                 | n 25-4 or 25-            |  | V <sub>3</sub> or V <sub>av34</sub> |                                    | pc/h (Equat              | tion 25-15 or 2                     | 5-16)                          |
|                               | 5)                                 |                               |                          |  |                                     | > 2 700 pc/h                       | ? ☐ Yes ☐                |                                     | ,                              |
| s $V_3$ or $V_{av34} > 2,70$  |                                    |                               |                          |  |                                     |                                    | ☐ Yes ☐                  |                                     |                                |
| s $V_3$ or $V_{av34} > 1.5$ * |                                    |                               |                          |  |                                     |                                    |                          |                                     |                                |
| Yes,V <sub>12a</sub> =        | pc/h                               | (Equation 25-                 | ·8)                      |  | If Yes,V <sub>12a</sub> =           |                                    | pc/n (Equ                | ation 25-18)                        |                                |
| Capacity Che                  | cks                                |                               |                          |  | Capacity                            | y Checks                           |                          |                                     |                                |
|                               | Actual                             | Ca                            | pacity                   | LOS F?   |                                     | Actu                               | al                       | Capacity                            | LOS F                          |
|                               |                                    |                               |                          |  | V <sub>F</sub>                      |                                    | Exhibit                  | 25-14                               |                                |
| $V_{FO}$                      | 6416                               | Exhibit 25-7                  |                          | No   | $V_{FO} = V_{F}$                    | - V <sub>D</sub>                   | Exhibit                  | 25-14                               |                                |
| · FU                          |                                    |                               |                          | ""   |                                     | K                                  |                          |                                     | +                              |
|                               | <u> </u>                           |                               |                          |  | V <sub>R</sub>                      |                                    | Exhibit                  |                                     |                                |
| low Entering                  |                                    | T .                           |                          | \/\(\text{i}_{c}\rightarrow\)                    | Flow En                             |                                    |                          | uence Are                           |                                |
| \/                            | Actual                             | 1                             | )esirable                | Violation?                                       | 17                                  | Actual                             |                          | Desirable                           | Violation?                     |
| V <sub>R12</sub>              | 4121                               | Exhibit 25-7                  | 4600:All                 | No   | V <sub>12</sub>                     |                                    | Exhibit 25-              |                                     | <u> </u>                       |
| evel of Serv                  |                                    |                               |                          |  | 1                                   |                                    |                          | ation (if n                         | ot F)                          |
| $D_{R} = 5.475 +$             | 0.00734 v <sub>R</sub> + 0         | 0.0078 V <sub>12</sub> - 0.00 | 0627 L <sub>A</sub>      |  | [                                   | $O_{R} = 4.252 -$                  | + 0.0086 V <sub>12</sub> | <sub>2</sub> - 0.009 L <sub>D</sub> |                                |
| <sub>R</sub> = 31.9 (pc       |                                    |                               |                          |  | N                                   | c/mi/ln)                           |                          |                                     |                                |
| OS = D (Exhib                 | · ·                                |                               |                          |  |                                     | xhibit 25-4)                       |                          |                                     |                                |
| Speed Detern                  | nination                           |                               |                          |  |                                     | etermina                           | tion                     |                                     |                                |
| 1 <sub>S</sub> = 0.493 (Exil  | bit 25-19)                         |                               |                          |  | 3                                   | xhibit 25-19)                      |                          |                                     |                                |
| <sub>R</sub> = 49.1 mph (     | (Exhibit 25-19)                    |                               |                          |  | S <sub>R</sub> = mp                 | oh (Exhibit 25-                    | 19)                      |                                     |                                |
| K                             |                                    |                               |                          |  | ls - m                              | oh (Exhibit 25-                    | 10)                      |                                     |                                |
|                               | (Exhibit 25-19)                    |                               |                          |  | 100- IIII                           | JII (EXIIIDIL 23-                  | 17)                      |                                     |                                |
| 5 <sub>0</sub> = 49.5 mph (   | (Exhibit 25-19)<br>(Exhibit 25-14) |                               |                          |  | I * .                               | on (Exhibit 25-<br>oh (Exhibit 25- |                          |                                     |                                |

|  |   |                                  | RAMP                     | S AND RAM                               | IP JUNCTI   | ONS WO   | RKS              | HEET                                      |   |                     |                    |
|--|---|----------------------------------|--------------------------|---|---|--|------------------|---|---|---------------------|--------------------|
| General  | I Inform  | nation                           |                          |   | Site Infor  |  |                  |   |   |                     |                    |
| Analyst<br>Agency or C<br>Date Perfori<br>Analysis Tin | Company<br>med<br>me Period                     | SEB<br>CHA<br>02/14<br>PM        | I/12                     | Ju<br>Ju                                | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year  | avel I   | Exit 4<br>NYSD   | ound I-87<br>NB Off to A<br>OT<br>Flyover | SR  |                     |                    |
| Project Desc   | cription I                                      | Exit 4                           |                          |   |   |  |                  |   |   |                     |                    |
| Inputs   |   |                                  | Terrain: Leve            | 7                                       |   |  |                  |   |   | D                   | A .I:              |
| Upstream A   | iaj Ramp<br>☐ On                                |                                  |                          |   |   |  |                  |   |   | Downstrea<br>Ramp   | ını Auj            |
| ✓ No   | □ Off   |                                  |                          |   |   |  |                  |   |   | ✓ Yes               | □ On               |
| 140  | - 011   |                                  |                          |   |   |  |                  |   |   | □ No                | ✓ Off              |
| L <sub>up</sub> =                                      | ft  |                                  |                          | F/ 0 b                                  |   | 0 4  | 0.0              | . 1.                                      |   | L <sub>down</sub> = | 2600 ft            |
| V <sub>u</sub> =                                       | veh/h   |                                  | 5                        | $s_{FF} = 56.0 \text{ mph}$<br>Sketch ( | show lanes, L <sub>A</sub> ,                                | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$                 | 0.0 m            | on  |   | V <sub>D</sub> =    | 110 veh/h          |
| Conver   | sion to   | pc/h Und                         | der Base                 | Conditions                              |   |  |                  |   |   |                     |                    |
| (pc/l  | h)  | V<br>(Veh/hr)                    | PHF                      | Terrain                                 | %Truck  | %Rv  |                  | $\mathbf{f}_{HV}$                         | f <sub>p</sub>                                      | v = V/PHF           | $x f_{HV} x f_{p}$ |
| Freeway  |   | 5500                             | 0.86                     | Level                                   | 2   | 0  | 0                | .990                                      | 1.00  | 64                  | 59                 |
| Ramp   |   | 1090                             | 0.86                     | Level                                   | 2   | 0  | 0                | .990                                      | 1.00  | 12                  | 80                 |
| UpStream<br>DownStrea                                  | ım  | 110                              | 0.86                     | Lovel                                   | 1   | 0  | +                | 005                                       | 1.00  | 1:                  | 20                 |
| Downstea   |   | 110                              | Merge Areas              | Level                                   |   | U  |                  | .995                                      | Diverge Areas                                       | 1.                  | 29                 |
| Estimation of v <sub>12</sub>                          |   |                                  |                          |   |   | Estimati   | ion d            |   | 5.1. o. go 7 oa o                                   |                     |                    |
|  |   | V <sub>12</sub> = V <sub>F</sub> | (P)                      |   |   | <del>                                     </del> |                  |   | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | -)P                 |                    |
| L <sub>EQ</sub> =                                      |   | 12 1                             | ation 25-2 o             | r 25-3)                                 |   | L <sub>FO</sub> =                                |                  |   | 74.30 (Equatio                                      | `                   | 25-9)              |
|  | P <sub>FM</sub> = using Equation (Exhibit 25-5) |                                  |                          |   |   |  |                  |   | .540 using Eq                                       |                     |                    |
| V <sub>12</sub> =                                      |   | pc/h                             | _ 100                    |   | hibit 25-5) $P_{FD} = 0.540$ using Eq. $V_{12} = 4075$ pc/h |  |                  |   |   | dation (Exi         |                    |
| V <sub>3</sub> or V <sub>av34</sub>                    |   | •                                | (Equation 25             | 5-4 or 25-5)                            |   | V <sub>3</sub> or V <sub>av34</sub>              |                  |   | 384 pc/h (Equ                                       | ation 25-1          | 5 or 25-16         |
|  | .24 > 2,700                                     | pc/h? ☐ Yes                      |                          |   |   |  | , > 2,           |   | Yes ☑ No  | u0                  | 0. 20 .0           |
|  |   | V <sub>12</sub> /2               |                          |   |   |  |                  |   | Tyes ✓ No   |                     |                    |
| If Yes,V <sub>12a</sub> =                              |   | · <del>-</del>                   | Equation 25              | 5-8)                                    |   | If Yes, $V_{12a} = pc/h$ (Equation 25-18)        |                  |   |   |                     |                    |
| Capacit  |   |                                  |                          |   |   | Capacity   |                  | ecks                                      |   |                     |                    |
|  |   | Actual                           | C                        | apacity                                 | LOS F?  |  |                  | Actual                                    | Ca  | pacity              | LOS F?             |
|  |   |                                  |                          |   |   | V <sub>F</sub>                                   |                  | 6459                                      | Exhibit 25-1  | 4 6780              | No                 |
| V <sub>F</sub>   | 。   |                                  | Exhibit 25-7             |   |   | $V_{FO} = V_{F}$                                 | - V <sub>R</sub> | 5179                                      | Exhibit 25-1  | 4 6780              | No                 |
|  |   |                                  |                          |   |   | V <sub>R</sub>                                   |                  | 1280                                      | Exhibit 25-3  | 2100                | No                 |
| Flow Er  | nterina   | Merge In                         | fluence A                | rea                                     |   | <del></del>                                      | terir            | na Dive                                   | rge Influen   | ce Area             |                    |
|  | Ĭ   | Actual                           | Y                        | Desirable                               | Violation?  |  | 1                | Actual                                    | Max Desirat   |                     | Violation?         |
| V <sub>R1</sub>  | 12  |                                  | Exhibit 25-7             |   |   | V <sub>12</sub>                                  |                  | 4075                                      | Exhibit 25-14                                       | 4400:All            | No                 |
| Level o  | f Servi   | ce Detern                        | nination (               | if not F)                               |   | Level of   | Ser              | vice De                                   | terminatio  | n (if not           | F)                 |
| $D_{R} = 5.4$  | 175 + 0.0                                       | 0734 v <sub>R</sub> + 0          | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>                  |   |  | ) <sub>R</sub> = | 4.252 + 0                                 | .0086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>  |                    |
| D <sub>R</sub> =                                       | (pc/mi/lr                                       | ٦)                               |                          |   |   | $D_R = 33$                                       | .0 (pc           | /mi/ln)                                   |   |                     |                    |
| LOS =  | (Exhibit  | 25-4)                            |                          |   |   | LOS = D  | (Exhi            | bit 25-4)                                 |   |                     |                    |
| Speed L  | Determ  | ination                          |                          |   |   | Speed D  | )eter            | rminatio                                  | on  |                     |                    |
| M <sub>S</sub> = (E                                    | Exibit 25                                       | -19)                             |                          |   |   | $D_s = 0.4$                                      | 478 <b>(E</b>    | xhibit 25                                 | -19)  |                     |                    |
| _  | nph (Exhi                                       | bit 25-19)                       |                          |   |   | $S_{R}^{=}$ 49.3 mph (Exhibit 25-19)             |                  |   |   |                     |                    |
|  | nph (Exhi                                       | bit 25-19)                       |                          |   |   | S <sub>0</sub> = 56.0 mph (Exhibit 25-19)        |                  |   |   |                     |                    |
| S = m  | nph (Exhil                                      | bit 25-14)                       |                          |   |   | S = 51   | .6 mpl           | h (Exhibit                                | 25-15)  |                     |                    |
| Copyright © 2  | 2007 Univer                                     | sity of Florida, A               | All Rights Reser         | ved                                     |   | HCS+ <sup>™</sup>                                | Versio           | on 5.3                                    | Ge  | nerated: 2/15       | /2012 2:33         |

| <b>n</b><br>SEB   | S AND RAN  | Site Infor  |  |   |  |   |  |                                    |
|---|--|---|--|---|--|---|--|------------------------------------|
| SEB   | _  |   |  |   |  |   |  |                                    |
| gency or Company CHA Junction ate Performed 02/14/12 Jurisdiction |  |   |  |   |  | olf   |  |                                    |
|   |  |   |  |   |  |   |  |                                    |
| Torrain: Love   | N.   |   |  |   |  | 1   |  |                                    |
| lenain. Leve  | 71   |   |  |   |  |   |  | m Adj                              |
|   |  |   |  |   |  |   | •  | □ On                               |
|   |  |   |  |   |  |   |  | Off                                |
|   |  |   |  |   |  |   |  |                                    |
|   | - 56.0 mnh   |   | S 4  | 0 0 mr  | h  |   | L <sub>down</sub> =  | ft                                 |
| 3   | • •  | (show lanes 1   |  | u.u mp  | )[]  |   | V <sub>D</sub> =   | veh/h                              |
| Under Rase  |  | ( SHOW lattes, L <sub>A</sub>   | D' R' Vf   |   |  |   |  |                                    |
|   |  | T   | 1  | 1   | ,  | ,   | \//DLIE  |                                    |
| hr) PHF   | Terrain  | %Truck  | %Rv  |   | † <sub>HV</sub>  | † <sub>p</sub>  | v = V/PHF  | x t <sub>HV</sub> x t <sub>p</sub> |
| <del></del>   | Level  | 2   | 0  | _   |  | 1.00  |  |                                    |
| <del>- 1</del>  | Level  | +   |  | ┰   |  | 1.00  |  | -                                  |
| 0.86  | Level  | 1   | 0  | 0   | .995   | 1.00  | 12   | 74                                 |
| Merge Areas   |  |   | 1  |   |  | Diverge Areas   |  |                                    |
|   |  |   | Estimati   | ion c   |  | <u> </u>  |  |                                    |
| = V <sub>E</sub> ( P <sub>EM</sub> )                              |  |   | 1  |   |  | : V <sub>D</sub> + (V <sub>C</sub> - V <sub>C</sub>   | s)P <sub>EP</sub>  |                                    |
|   | (25-3)   |   | L <sub>FO</sub> =  |   |  |   |  |                                    |
|   |  |   |  |   |  | -   |  | ibit 25-12)                        |
|   | ,  |   |  |   |  |   |  |                                    |
|   | 5-4 or 25-5)   |   |  |   |  | •   | ation 25-15  | or 25-16                           |
|   | ,  |   |  | <sub>84</sub> > 2,7   |  |   |  |                                    |
|   |  |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$   Yes   No   |   |  |   |  |                                    |
|   | 5-8)   |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)  |   |  |   |  |                                    |
|   |  |   | Capacity   | y Ch  | ecks   |   |  |                                    |
| al C  | apacity  | LOS F?  |  |   | Actual   | Ca  | pacity   | LOS F                              |
|   |  |   | $V_{F}$  |   | 5167   | Exhibit 25-1  | 4 6780   | No                                 |
| Exhibit 25-7  |  |   | $V_{FO} = V_{F}$   | - V <sub>R</sub>  | 5038   | Exhibit 25-1  | 4 6780   | No                                 |
|   |  |   | V <sub>R</sub>   |   | 129  | Exhibit 25-3  | 2100   | No                                 |
| e Influence A   | rea  |   | Flow En  | terir   | ng Dive  | rge Influen   | ce Area  | •                                  |
| - r   |  | Violation?  |  | - II  |  |   |  | Violation                          |
| Exhibit 25-7  |  |   |  |   |  | Exhibit 25-14   | 4400:All   | No                                 |
| ·   |  |   |  |   |  |   | •  | F)                                 |
| R + 0.0078 V <sub>12</sub>  | 0.00627 L <sub>A</sub>   |   |  | O <sub>R</sub> = 4  | 4.252 + 0  | .0086 V <sub>12</sub> - 0.  | 009 L <sub>D</sub>   |                                    |
|   |  |   | $D_R = 29$   | .3 (pc  | :/mi/ln)   |   |  |                                    |
|   |  |   |  | •   |  |   |  |                                    |
| on  |  |   | Speed D  | eter  | minatio  | on  |  |                                    |
|   |  |   |  | 375 <b>(E</b>   | xhibit 25  | -19)  |  |                                    |
| 9)  |  |   | $S_{R}$ = 50.8 mph (Exhibit 25-19)   |   |  |   |  |                                    |
| •   |  |   | $S_0 = 58.0 \text{ mph (Exhibit 25-19)}$   |   |  |   |  |                                    |
| 4)  |  |   | S = 53   | .2 mpł  | n (Exhibit   | 25-15)  |  |                                    |
|   | Terrain: Level    Terrain: Level   Terrain: Level   Terrain: Level   Terrain: Level   Terrain: Level   Terrain: Level   Secure   PHF | Terrain: Level  S FF = 56.0 mph Sketch  Under Base Conditions  PHF Terrain  0 0.86 Level 0 0.86 | Terrain: Level   S   FF = 56.0 mph   Sketch (show lanes, L   FF   Sketch | Terrain: Level   S <sub>FF</sub> = 56.0 mph   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>P</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show lanes, L <sub>A</sub> ,L <sub>D</sub> ,V <sub>R</sub> ,V <sub>R</sub> )   Sketch (show | Terrain: Level   S <sub>FR</sub> = 56.0 mph   S <sub>FR</sub> = 40.0 mp   Sketch (show lanes, L <sub>A</sub> , L <sub>D</sub> ,V <sub>R</sub> ,V <sub>p</sub> )   DUnder Base Conditions   Shipper   Market   Mar | Terrain: Level   S   FR   40.0 mph   Sex   40.0 mph   Sketch (show lanes, L   L   D   V   V   V   V   V   V   V   V   V | Terrain: Level   S   FR   40.0 mph   Sketch ( show lanes, L   L   D   V   V   V   Sketch ( show lanes, L   L   D   V   V   V   V   V   V   V   V   V | Terrain: Level                     |

|   |  | RAMP                | S AND RAM                               | IP JUNCTI  | ONS WO  | RKS                                 | HEET                     |   |                     |                                    |
|---|--|---------------------|---|--|---|-------------------------------------|--------------------------|---|---------------------|------------------------------------|
| General In  | formation                              |                     | <u> </u>                                | Site Infor   |   |                                     |                          |   |                     |                                    |
| Analyst<br>Agency or Com<br>Date Performed<br>Analysis Time F | SEB<br>pany CHA<br>l 02/1<br>Period PM |                     | Jı<br>Jı                                | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | ravel S   | Southb<br>Exit 2V<br>NYSD<br>2016 F | V Off                    |   |                     |                                    |
| Project Descript  | tion Exit 4                            |                     |   |  |   |                                     |                          |   |                     |                                    |
| Inputs  |  | Terrain: Leve       | 7                                       |  |   |                                     |                          | 1   | Б                   | A 1:                               |
| Upstream Adj R  | •                                      | Terrain. Ecve       | ·1                                      |  |   |                                     |                          |   | Downstrea<br>Ramp   | ım Aaj                             |
|   | On                                     |                     |   |  |   |                                     |                          |   | ✓ Yes               | ✓ On                               |
| ™ No  | Off                                    |                     |   |  |   |                                     |                          |   | □ No                | ☐ Off                              |
| L <sub>up</sub> = f   | t                                      |                     |   |  |   |                                     |                          |   | L <sub>down</sub> = | 1300 ft                            |
| V <sub>u</sub> = v  | eh/h                                   | S                   | $s_{FF} = 56.0 \text{ mph}$<br>Sketch ( | show lanes, L <sub>A</sub>                                 | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$                | 0.0 mj                              | oh                       |   | V <sub>D</sub> =    | 800 veh/h                          |
| Conversio   | on to pc/h Un                          | der Base            | Conditions                              |  |   |                                     |                          |   |                     |                                    |
| (pc/h)  | V<br>(Veh/hr)                          | PHF                 | Terrain                                 | %Truck   | %Rv   |                                     | $f_{HV}$                 | f <sub>p</sub>                                    | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 3900                                   | 0.92                | Level                                   | 2  | 0   | 0                                   | .990                     | 1.00  | 42                  | 82                                 |
| Ramp  | 430                                    | 0.92                | Level                                   | 2  | 0   | 0                                   | .990                     | 1.00  | 4                   | 72                                 |
| UpStream<br>DownStream  | 800                                    | 0.92                | Level                                   | 2  | 0   | +                                   | .990                     | 1.00  | 87                  | 70                                 |
| DownStream  | 800                                    | Merge Areas         | FeAGI                                   |  |   |                                     |                          | Diverge Areas                                     | 0.                  | 70                                 |
| Estimation  | n of v <sub>12</sub>                   |                     |   |  | Estimati  | ion d                               |                          |   |                     |                                    |
|   | V <sub>12</sub> = V <sub>F</sub>       | ( P <sub>EM</sub> ) |   |  | †   |                                     |                          | V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | )P <sub>ED</sub>    |                                    |
| L <sub>EQ</sub> =   | 12 1                                   | ıation 25-2 oı      | r 25-3)                                 |  | L <sub>FO</sub> =                               |                                     |                          | Equation 25-8                                     |                     |                                    |
| P <sub>FM</sub> =   |  | Equation (I         |   |  | P <sub>FD</sub> =                               |                                     |                          | 631 using Eq                                      |                     | nibit 25-12)                       |
| V <sub>12</sub> =   | pc/h                                   |                     |   |  | V <sub>12</sub> = 2877 pc/h                     |                                     |                          |   |                     |                                    |
| $V_3$ or $V_{av34}$   | pc/h                                   | (Equation 25        | 5-4 or 25-5)                            |  | $V_3$ or $V_{av34}$                             |                                     | 14                       | 405 pc/h (Equ                                     | ation 25-1          | or 25-16                           |
| Is V <sub>3</sub> or V <sub>av34</sub> >                      | · 2,700 pc/h? ☐ Ye                     | es 🗆 No             |   |  | Is V <sub>3</sub> or V <sub>av3</sub>           | 34 > 2,                             | 700 pc/h? [              | Yes  ✓ No   |                     |                                    |
|   | · 1.5 * V <sub>12</sub> /2             |                     |   |  |   |                                     |                          | Yes 🗹 No  |                     |                                    |
| f Yes,V <sub>12a</sub> =                                      |  | (Equation 25        | 5-8)                                    |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18) |                                     |                          |   |                     |                                    |
| Capacity (  |  | _                   |   |  | Capacity  | y Ch                                |                          |   |                     |                                    |
|   | Actual                                 | C                   | apacity                                 | LOS F?   | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \           |                                     | Actual                   |   | pacity              | LOS F                              |
| V   |  | E 1 11 11 05 7      |   |  | V <sub>F</sub>                                  |                                     | 4282                     | Exhibit 25-1                                      | +                   | No                                 |
| V <sub>FO</sub>   |  | Exhibit 25-7        |   |  | $V_{FO} = V_{F}$                                | - v <sub>R</sub>                    | 3810                     | Exhibit 25-1                                      | _                   | No                                 |
|   |  |                     | <u> </u>                                |  | V <sub>R</sub>                                  |                                     | 472                      | Exhibit 25-3                                      |                     | No                                 |
| riow Ente   | ring Merge II<br>Actual                | ır                  | A <b>rea</b><br>Desirable               | Violation?   | FIOW En   |                                     | <b>ng Dive</b><br>Actual | rge Influen<br>Max Desirab                        |                     | Violation                          |
| V <sub>R12</sub>  | Actual                                 | Exhibit 25-7        | DOSHANIC                                | violation!   | V <sub>12</sub>                                 | _                                   | 2877                     | Exhibit 25-14                                     | 4400:All            | No                                 |
|   | ervice Deteri                          |                     | if not F)                               | 1  |   |                                     |                          | eterminatio                                       |                     | <u> </u>                           |
|   | + 0.00734 v <sub>R</sub> +             | •                   |   |  |   |                                     |                          | .0086 V <sub>12</sub> - 0.                        | •                   | · /                                |
| ••  | c/mi/ln)                               | 12                  | A                                       |  |   |                                     | :/mi/ln)                 | 12  | D                   |                                    |
|   | xhibit 25-4)                           |                     |   |  |   |                                     | bit 25-4)                |   |                     |                                    |
| •   | termination                            |                     |   |  | Speed D   | •                                   |                          | on  |                     |                                    |
| -   | oit 25-19)                             |                     |   |  |   |                                     | xhibit 25                |   |                     |                                    |
| -   | (Exhibit 25-19)                        |                     |   |  | S <sub>R</sub> = 50.3 mph (Exhibit 25-19)       |                                     |                          |   |                     |                                    |
|   | (Exhibit 25-19)                        |                     |   |  | S <sub>0</sub> = 59.9 mph (Exhibit 25-19)       |                                     |                          |   |                     |                                    |
| -   | (Exhibit 25-14)                        |                     |   |  | S = 53  | .1 mpl                              | n (Exhibit               | 25-15)  |                     |                                    |
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| • • • •   |                              | IVAIVIE             | S AND RAM                |   |  | 1110                                  |                 |  |                   |                                    |
|---|------------------------------|---------------------|--------------------------|---|--|---------------------------------------|-----------------|--|-------------------|------------------------------------|
| General Info  |                              |                     |                          | Site Infor  |  |                                       |                 |  |                   |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 02/1                         |                     | Ji<br>Ji                 | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year | ]<br>]   | Southb<br>Exit 4 S<br>NYSD(<br>2016 F | TC              |  |                   |                                    |
| Project Description   |                              |                     | ^                        | ilialysis i cai   |  | 20101                                 | Tyovei          |  |                   |                                    |
| Inputs  | LAICT                        |                     |                          |   |  |                                       |                 |  |                   |                                    |
| Upstream Adj Ramp   | )                            | Terrain: Leve       |                          |   |  |                                       |                 |  | Downstrea<br>Ramp | m Adj                              |
| □ Yes □ O   | n                            |                     |                          |   |  |                                       |                 |  | ✓ Yes             | <b>☑</b> On                        |
| ™ No □ O  | ff                           |                     |                          |   |  |                                       |                 |  | □ No              | ☐ Off                              |
| L <sub>up</sub> = ft  |                              | S                   | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4  | 0.0 mp                                | oh              |  | down              | 1585 ft                            |
| V <sub>u</sub> = veh/   |                              |                     | Sketch (                 | show lanes, L <sub>A</sub>                                  |  |                                       |                 |  | V <sub>D</sub> =  | 990 veh/                           |
| Conversion  | to pc/h Un                   | der Base (          | Conditions               |   |  |                                       |                 |  |                   |                                    |
| (pc/h)  | V<br>(Veh/hr)                | PHF                 | Terrain                  | %Truck  | %Rv  |                                       | f <sub>HV</sub> | f <sub>p</sub>                         | v = V/PHF         | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 3650                         | 0.92                | Level                    | 2   | 0  | 0.                                    | .990            | 1.00                                   | 400               | )7                                 |
| Ramp  | 720                          | 0.92                | Level                    | 2   | 0  | 0                                     | .990            | 1.00                                   | 79                | 0                                  |
| UpStream  | 000                          | 0.00                | 1                        | 1   | 0  | +                                     | 000             | 1.00                                   | 100               |                                    |
| DownStream  | 990                          | 0.93<br>Merge Areas | Level                    | 4   | 0  | 0                                     | .980            | 1.00<br>Diverge Areas                  | 108               | 36                                 |
| Estimation o  |                              | ivici ye Ai eas     |                          |   | Estimati   | ion c                                 |                 | Diverge Areas                          |                   |                                    |
|   |                              | (D.)                |                          |   |  |                                       |                 | \/ \(\lambda\/\)                       | \D                |                                    |
|   | $V_{12} = V_F$               |                     |                          |   |  |                                       |                 | = V <sub>R</sub> + (V <sub>F</sub> - V |                   |                                    |
| L <sub>EQ</sub> =   |                              | ation 25-2 or       |                          |   | L <sub>EQ</sub> =  |                                       |                 | Equation 25-8                          |                   |                                    |
| P <sub>FM</sub> =   | _                            | Equation (E         | xhibit 25-5)             |   | P <sub>FD</sub> =  |                                       |                 | .623 using Ed                          | quation (Exhi     | ibit 25-12)                        |
| V <sub>12</sub> =   | pc/h                         |                     |                          |   | $V_{12} = 2796 \text{ pc/h}$   |                                       |                 |  |                   |                                    |
| $V_3$ or $V_{av34}$   |                              | (Equation 25        | -4 or 25-5)              |   | $V_3$ or $V_{av34}$  |                                       |                 | 211 pc/h (Equ                          | ation 25-15       | or 25-16                           |
| Is $V_3$ or $V_{av34} > 2.7$  |                              |                     |                          |   |  |                                       |                 | Yes Mo                                 |                   |                                    |
| Is $V_3$ or $V_{av34} > 1.5$  | :=                           |                     |                          |   |  |                                       |                 | TYes  ✓ No                             |                   |                                    |
| If Yes,V <sub>12a</sub> =   | pc/h                         | (Equation 25        | -8)                      |   | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)                      |                                       |                 |  |                   |                                    |
| Capacity Ch   | ecks                         |                     |                          |   | Capacity   | y Ch                                  | ecks            |  |                   |                                    |
|   | Actual                       | C                   | apacity                  | LOS F?  |  |                                       | Actual          | Ca                                     | pacity            | LOS F                              |
|   |                              |                     |                          |   | $V_{F}$  |                                       | 4007            | Exhibit 25-1                           | 4 6780            | No                                 |
| V <sub>FO</sub>   |                              | Exhibit 25-7        |                          |   | $V_{FO} = V_{F}$   | - V <sub>R</sub>                      | 3217            | Exhibit 25-1                           | 4 6780            | No                                 |
|   |                              |                     |                          |   | V <sub>R</sub>   |                                       | 790             | Exhibit 25-3                           | 3 2100            | No                                 |
| Flow Enterin  | a Merae In                   | fluence A           | rea                      |   | <del>:</del>   | terir                                 | na Dive         | rge Influen                            | ce Area           |                                    |
|   | Actual                       | 1                   | Desirable                | Violation?  |  | 1                                     | Actual          | Max Desiral                            |                   | Violation                          |
| V <sub>R12</sub>  |                              | Exhibit 25-7        |                          |   | V <sub>12</sub>  |                                       | 2796            | Exhibit 25-14                          | 4400:All          | No                                 |
| Level of Serv   | ice Deterr                   |                     | f not F)                 |   |  | Ser                                   | vice De         | terminatio                             | n (if not l       | <del>-</del> )                     |
| $D_R = 5.475 + 0$   |                              |                     |                          |   | +  |                                       |                 | 0.0086 V <sub>12</sub> - 0.            |                   | 1                                  |
| D <sub>R</sub> = (pc/mi   |                              | 12                  | A                        |   |  |                                       | :/mi/ln)        | 12                                     | D                 |                                    |
| **  | oit 25-4)                    |                     |                          |   |  |                                       | bit 25-4)       |  |                   |                                    |
| Speed Deter   |                              |                     |                          |   | Speed D  | •                                     |                 | on                                     |                   |                                    |
| $M_S = $ (Exibit 2  |                              |                     |                          |   |  |                                       | xhibit 25       |  |                   |                                    |
| o .   |                              |                     |                          |   |  | •                                     |                 | *                                      |                   |                                    |
|   | hibit 25-19)                 |                     |                          |   | $S_R$ = 49.9 mph (Exhibit 25-19)<br>$S_0$ = 60.6 mph (Exhibit 25-19) |                                       |                 |  |                   |                                    |
|   | hibit 25-19)<br>hibit 25-14) |                     |                          |   | S = 52.7 mph (Exhibit 25-15)   |                                       |                 |  |                   |                                    |
| S = mph(Ex)   |                              |                     |                          |   |  |                                       |                 |  |                   |                                    |

|  |                            | MPS AND                       | VAINL JOIN                   |                             |  |                                  |                                      |                        |                                   |
|--|----------------------------|-------------------------------|------------------------------|-----------------------------|--|----------------------------------|--------------------------------------|------------------------|-----------------------------------|
| General Infor  | mation                     |                               |                              | Site Infor                  | mation   |                                  |                                      |                        |                                   |
| Analyst<br>Agency or Company   | SEB<br>CHA                 |                               |                              | reeway/Dir of Tr<br>unction |  | Southbound I-8<br>Exit 4 SB On-R |                                      |                        |                                   |
| Date Performed   | 02/14                      |                               |                              | urisdiction                 |  | NYSDOT                           | amp                                  |                        |                                   |
| Analysis Time Period   |                            |                               |                              | nalysis Year                |  | 2016 Flyover                     |                                      |                        |                                   |
| Project Description  |                            |                               |                              |                             |  | ,                                |                                      |                        |                                   |
| nputs  |                            |                               |                              |                             |  |                                  |                                      |                        |                                   |
| Ipstream Adj Ramp  |                            | Terrain: Level                |                              |                             |  |                                  |                                      | Downstre<br>Ramp       | eam Adj                           |
| Yes Or   | 1                          |                               |                              |                             |  |                                  |                                      | ☐ Yes                  | ☐ On                              |
| No   | f                          |                               |                              |                             |  |                                  |                                      | ✓ No                   | ☐ Off                             |
| <sub>up</sub> = 1585   | ft                         |                               |                              |                             |  |                                  |                                      | L <sub>down</sub> =    | ft                                |
| •  |                            | S                             | $_{\rm F} = 56.0 \; \rm mph$ |                             | $S_{FR} = 40.0 \text{ mph}$                              |                                  |                                      |                        |                                   |
| $v_{\rm u} = 720 \text{ v}$  | eh/h                       |                               | Sketch (                     | show lanes, $L_{A'}$        | $L_{D'}V_{R'}V_{f}$                                      | V <sub>D</sub> =                 | veh/h                                |                        |                                   |
| Conversion to  | o pc/h Und                 | der Base C                    | onditions                    |                             |  |                                  |                                      | •                      |                                   |
| (pc/h)   | V<br>(Veh/hr)              | PHF                           | Terrain                      | %Truck                      | %Rv  | f <sub>HV</sub>                  | f <sub>p</sub>                       | v = V/PH               | Fxf <sub>HV</sub> xf <sub>p</sub> |
| reeway   | 2950                       | 0.92                          | Level                        | 2                           | 0  | 0.990                            | 1.00                                 |                        | 3239                              |
| Ramp   | 990                        | 0.93                          | Level                        | 4                           | 0  | 0.980                            | 1.00                                 |                        | 1086                              |
| JpStream   | 720                        | 0.92                          | Level                        | 2                           | 0  | 0.990                            | 1.00                                 |                        | 790                               |
| DownStream   |                            | <u> </u>                      |                              |                             |  |                                  | D' A                                 |                        |                                   |
| Merge Areas Diverge Stimation of V <sub>12</sub> Estimation of V <sub>12</sub> |                            |                               |                              |                             |  |                                  | Diverge Are                          | as                     |                                   |
| Sumation of  |                            |                               |                              |                             | Estimat  | 1011 01 V <sub>12</sub>          |                                      |                        |                                   |
|  | $V_{12} = V_{F}$           | (P <sub>FM</sub> )            |                              |                             |  | V <sub>12</sub>                  | = V <sub>R</sub> + (V <sub>F</sub> - | $V_{R})P_{FD}$         |                                   |
| EQ =   | 1199.21                    | l (Equation 2                 | 25-2 or 25-3)                |                             | L <sub>EQ</sub> =  | 12                               |                                      | 25-8 or 25-            | 9)                                |
| P <sub>FM</sub> = 0.614 using Equation (Exhibit 25-5)                          |                            |                               |                              |                             |  |                                  |                                      | ation (Exhibi          |                                   |
| ' <sub>12</sub> =  | 1990                       |                               |                              |                             |  |                                  |                                      | •                      | ,                                 |
| or V <sub>av34</sub>   |                            | pc/h (Equatio                 | n 25-4 or 25-                |                             | V <sub>3</sub> or V <sub>av34</sub>                      |                                  | -                                    | on 25-15 or 2          | 5-16)                             |
|  | 5)                         |                               |                              |                             | Is $V_3$ or $V_{av34} > 2,700$ pc/h?  Yes No             |                                  |                                      |                        |                                   |
| s $V_3$ or $V_{av34} > 2,70$   |                            |                               |                              |                             | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes $\square$ No |                                  |                                      |                        |                                   |
| s $V_3$ or $V_{av34} > 1.5$  |                            |                               | -\                           |                             | If Yes, $V_{12a} = pc/h$ (Equation 25-18)                |                                  |                                      |                        |                                   |
| Yes,V <sub>12a</sub> =   |                            | (Equation 25-                 | ·8)                          |                             | 120  |                                  | po/ii (Equa                          | 2011 20-10             | 1                                 |
| Capacity Che   |                            |                               |                              |                             | Capacit  | y Checks                         |                                      |                        |                                   |
|  | Actual                     | Ca                            | pacity                       | LOS F?                      | ļ ,,   | Actua                            | ì                                    | Capacity               | LOS F?                            |
|  |                            |                               |                              |                             | V <sub>F</sub>   |                                  | Exhibit 2                            | 25-14                  |                                   |
| $V_{FO}$   | 4325                       | Exhibit 25-7                  |                              | No                          | $V_{FO} = V_{F}$   | - V <sub>R</sub>                 | Exhibit 2                            | 25-14                  |                                   |
|  |                            |                               |                              |                             | $V_R$  |                                  | Exhibit :                            | 25-3                   |                                   |
| low Entering   | g Merge In                 | fluence A                     | rea                          |                             | Flow En  | tering Div                       | erge Influ                           | ience Are              | ea                                |
|  | Actual                     | Max D                         | esirable                     | Violation?                  |  | Actual                           |                                      | esirable               | Violation?                        |
| V <sub>R12</sub>   | 3076                       | Exhibit 25-7                  | 4600:All                     | No                          | V <sub>12</sub>  |                                  | Exhibit 25-1                         | 4                      | <u></u>                           |
| Level of Serv  | ice Deterr                 | nination (i                   | not F)                       |                             | Level of   | Service L                        | Determina                            | tion (if n             | ot F)                             |
| D <sub>R</sub> = 5.475 +   | 0.00734 v <sub>R</sub> + 0 | 0.0078 V <sub>12</sub> - 0.00 | )627 L <sub>A</sub>          |                             |  | D <sub>R</sub> = 4.252 +         | 0.0086 V <sub>12</sub>               | - 0.009 L <sub>D</sub> |                                   |
| O <sub>R</sub> = 20.7 (pc  | /mi/ln)                    |                               |                              |                             | $D_R = (p$   | c/mi/ln)                         |                                      |                        |                                   |
| OS = C (Exhib  | oit 25-4)                  |                               |                              |                             | LOS = (E   | xhibit 25-4)                     |                                      |                        |                                   |
| Speed Detern   | nination                   |                               |                              |                             |  | Determina                        | tion                                 |                        |                                   |
|  |                            |                               |                              |                             |  | xhibit 25-19)                    |                                      |                        |                                   |
| $M_{\rm S} = 0.300  (Exi$  |                            |                               | ph (Exhibit 25-1             | 9)                          |  |                                  |                                      |                        |                                   |
|  | (Exhibit 25-19)            |                               |                              |                             | 1  |                                  |                                      |                        |                                   |
| 5 <sub>0</sub> = 53.3 mph (  | (Exhibit 25-19)            |                               |                              |                             | $S_0$ = mph (Exhibit 25-19)<br>S = mph (Exhibit 25-15)   |                                  |                                      |                        |                                   |
|  | (Exhibit 25-14)            |                               |                              |                             | c  | nh /Fyhih!! OF 4                 | E/                                   |                        |                                   |

|  |   | RAN                       | MPS AND                                 | RAMP JUNG              | CTIONS W   | ORKSHE  | ET               |   |                        |                                      |                                      |
|--|---|---------------------------|---|------------------------|--|---|------------------|---|------------------------|--------------------------------------|--------------------------------------|
| Genera   | Inform  | nation                    |   |                        | Site Infor   | mation  |                  |   |                        |                                      |                                      |
| Analyst<br>Agency or C<br>Date Perfori<br>Analysis Tin | med   | SEB<br>CHA<br>02/14<br>PM | /12                                     | Jui<br>Jui             | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year | <u> </u>  | Exit 5 S         | oound I-87<br>SB On-Rar<br>OT<br>Tyover | mp                     |                                      |                                      |
| Project Des  | cription E  | Exit 4                    |   |                        |  |   |                  |   |                        |                                      |                                      |
| Inputs   |   |                           | -                                       |                        |  |   |                  |   |                        |                                      |                                      |
| Jpstream A<br>—  | •   |                           | Terrain: Level                          |                        |  |   |                  |   |                        | Downstre<br>Ramp                     | eam Adj                              |
| Yes  | □ On  |                           |   |                        |  |   |                  |   |                        | Yes                                  | □ On                                 |
| ™ No   | ☐ Off   |                           |   |                        |  |   |                  |   |                        | □ No                                 | ✓ Off                                |
| - <sub>up</sub> =<br>/ <sub>u</sub> =                  | ft<br>veh/h   |                           | S                                       | FF = 56.0 mph          | ehow lance I   | S <sub>FR</sub> = 4   | 0.0 mp           | h                                       |                        | L <sub>down</sub> = V <sub>D</sub> = | 4700 ft<br>720 veh/h                 |
|  |   | no/h I Inc                | lor Pasa (                              |                        | show lanes, L <sub>A</sub> ,                           | L <sub>D</sub> , v <sub>R</sub> , v <sub>f</sub> )              |                  |   |                        |                                      |                                      |
|  |   | <i>pc/n und</i><br>∀      |   | Conditions             |  | 1   | Т                |   |                        | T                                    |                                      |
| (pc/   | h)  | (Veh/hr)                  | PHF                                     | Terrain                | %Truck   | %Rv   |                  | f <sub>HV</sub>                         | f <sub>p</sub>         | v = V/PH                             | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  |   | 3050                      | 0.92                                    | Level                  | 2  | 0   | 0.               | 990                                     | 1.00                   | <u> </u>                             | 3348                                 |
| Ramp   |   | 610                       | 0.87                                    | Level                  | 1  | 0   | 0.               | 995                                     | 1.00                   | 1                                    | 705                                  |
| UpStream   | m   | 700                       | 0.00                                    | Laval                  | 2  |   |                  | 000                                     | 1.00                   | -                                    | 700                                  |
| DownStrea  | m   | 720                       | 0.92<br>Merge Areas                     | Level                  | 2  | 0   | 0.               | 990                                     | 1.00<br>Diverge Area   |                                      | 790                                  |
| <br>Estimat  | Estimation of v <sub>12</sub> Estimation of v <sub>12</sub> |                           |   |                        |  |   |                  | Diverge Area                            | 15                     |                                      |                                      |
|  |   |                           | (D )                                    |                        |  |   |                  | <u></u>                                 |                        |                                      |                                      |
|  |   | $V_{12} = V_F$            | • | 25.0 05.0)             |  |   |                  |   | $V_R + (V_F -$         |                                      |                                      |
| -EQ =  |   |                           |   | 25-2 or 25-3)          |  | L <sub>EQ</sub> =   |                  |   | (Equation 2            | 25-8 or 25-                          | 9)                                   |
| <sub>FM</sub> =  |   |                           |   |                        |  |   |                  |   | using Equa             | ation (Exhibit                       | 25-12)                               |
| / <sub>12</sub> =                                      |   | 2055 p                    |   | V <sub>12</sub> = pc/h |  |   |                  |   |                        |                                      |                                      |
| / <sub>3</sub> or V <sub>av34</sub>                    |   |                           | oc/h (Equatio                           | n 25-4 or 25-          |  | V <sub>3</sub> or V <sub>av34</sub>                             |                  |   | pc/h (Equation         | on 25-15 or 2                        | ō-16)                                |
| ls V <sub>-</sub> or V                                 | > 2 700   | 5)<br>pc/h? ☐ Yes         | No.                                     |                        |  | Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |                  |   |                        |                                      |                                      |
|  |   | V <sub>12</sub> /2        |   |                        |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                  |                  |   |                        |                                      |                                      |
|  |   | · <del>-</del>            |   | 0)                     |  | If Yes, $V_{12a}$ = pc/h (Equation 25-18)                       |                  |   |                        |                                      |                                      |
| Yes,V <sub>12a</sub>                                   |   |                           | Equation 25                             | -0)                    |  | Capacity  |                  |   | 1 ( 1                  |                                      |                                      |
| Capacit  | y Criec   |                           | I c.                                    | ana city               | 100.00   | Сараспу   | CII              |   |                        | Conocity                             | 1000                                 |
|  |   | Actual                    |   | npacity                | LOS F?   | V <sub>F</sub>  | -                | Actual                                  | Exhibit 2              | Capacity                             | LOS F?                               |
|  |   | 1050                      |   |                        | <b>.</b>   |   | \                |   |                        |                                      | _                                    |
| V <sub>F</sub>   | 0   | 4053                      | Exhibit 25-7                            |                        | No   | $V_{FO} = V_{F}$  | · V <sub>R</sub> |   | Exhibit 2              | _                                    |                                      |
|  |   |                           |   |                        | <u> </u>   | V <sub>R</sub>  |                  |   | Exhibit 2              |                                      |                                      |
| Flow Er  | ntering   |                           | fluence A                               |                        |  | Flow En   | _                |   | erge Influ             |                                      |                                      |
|  | -   | Actual                    |   | Desirable              | Violation?   | .,  | -                | Actual                                  | Max De                 |                                      | Violation?                           |
| V <sub>R1</sub>  | 2   | 2760                      | Exhibit 25-7                            | 4600:All               | No   | V <sub>12</sub>   | ب                |   | Exhibit 25-14          |                                      |                                      |
|  |   |                           | nination (i                             |                        |  |   |                  |   | etermina               |                                      | ot F)                                |
| .,   |   |                           | .0078 V <sub>12</sub> - 0.0             | 0627 L <sub>A</sub>    |  |   | ••               |   | 0.0086 V <sub>12</sub> | - 0.009 L <sub>D</sub>               |                                      |
| ) <sub>R</sub> =                                       | 18.5 (pc/r  | •                         |   |                        |  |   | c/mi/l           | ,                                       |                        |                                      |                                      |
| .OS =  | B (Exhibit  | •                         |   |                        |  |   |                  | 25-4)                                   |                        |                                      |                                      |
| Speed I  | Determ  | ination                   |   |                        |  | Speed D   |                  |   | on                     |                                      |                                      |
| $M_S = 0$  | .279 (Exibi   | t 25-19)                  |   |                        |  | 3   | xhibit 2         |   |                        |                                      |                                      |
| -  | 2.1 mph (E  | xhibit 25-19)             |   |                        |  | S <sub>R</sub> = mp   | oh (Exl          | nibit 25-19                             | )                      |                                      |                                      |
|  | 3.1 mph (E  | xhibit 25-19)             |   |                        |  | S <sub>0</sub> = mp   | oh (Exl          | nibit 25-19                             | )                      |                                      |                                      |
|  | 2.4 mph (E  | xhibit 25-14)             |   |                        |  | S = mp  | oh (Exl          | nibit 25-15                             | )                      |                                      |                                      |
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|   |  |                            | FREEWA                | Y WEAV               | /ING WOR                                      | KSHEE          | Τ               |  |              |  |
|---|--|----------------------------|-----------------------|----------------------|---|----------------|-----------------|--|--------------|--|
| General   | Informat   | ion                        |                       |                      | Site Info                                     | rmation        |                 |  |              |  |
| Analyst<br>Agency/Con<br>Date Perfori<br>Analysis Tin | med  | SEB<br>CHA<br>02/14/<br>PM | 12                    |                      | Weaving Seg Location Exit<br>Jurisdiction NYS |                |                 | lorthbound<br>E on to 2W o<br>OOT<br>Flyover | ff           |  |
| Inputs  |  |                            |                       |                      | •   |                |                 |  |              |  |
| Weaving nu<br>Weaving se<br>Terrain                   | e-flow speed, and the speed, and the speed and the speed and the speed and the speed and the speed, and the speed, and the speed and the speed, and the speed and the speed, and the speed and the speed, and the speed and th | N                          | 56<br>4<br>815<br>Lev | IVVEAVILIO TAILO. IX |   |                |                 | A<br>0.2<br>0.3                              |              |  |
| Convers   | sions to p   | oc/h Unde                  | er Base C             | í e                  |   |                |                 |  | 1            |  |
| (pc/h)  | V  | PHF                        | Truck %               | RV %                 | E <sub>T</sub>                                | E <sub>R</sub> | f <sub>HV</sub> | fp   | V            |  |
| V <sub>o1</sub>                                       | 4200   | 0.86                       | 2                     | 0                    | 1.5   | 1.2            | 0.990           | 1.00   | 4932         |  |
| $V_{o2}$  | 0  | 0.92                       | 2                     | 0                    | 1.5   | 1.2            | 0.990           | 1.00   | 0            |  |
| $V_{w1}$  | 800  | 0.92                       | 2                     | 0                    | 1.5   | 1.2            | 0.990           | 1.00   | 878          |  |
| $V_{w2}$  | 450  | 0.92                       | 2                     | 0                    | 1.5   | 1.2            | 0.990           | 1.00   | 494          |  |
| $V_{_{ m W}}$   |  |                            | _                     | 1372                 | V <sub>nw</sub>                               |                | •               | •  | 4932         |  |
| V   | 7  |                            |                       |                      | ,   | l              |                 |  | 6304         |  |
| Weaving   | g and No   | n-Weavin                   | g Speeds              | 5                    |   |                |                 |  |              |  |
|   |  |                            | Unconstr              | 4                    |   |                |                 | trained                                      |              |  |
| o /Evhibit O/   | 1./\   | Weaving                    |                       |                      | ving (i = nw)                                 | Weavir         | ng (i = w)      | Non-Wea                                      | ving ( = nw) |  |
| a (Exhibit 24<br>b (Exhibit 24                        |  | 0.15<br>2.20               |                       |                      | .00   |                |                 |  |              |  |
| c (Exhibit 24   |  | 0.97                       |                       |                      | .30   |                |                 |  |              |  |
| d (Exhibit 24   |  | 0.80                       |                       |                      | .75   |                |                 |  |              |  |
| Weaving intensi                                       | •  | 1.37                       | 1                     | 0                    | .72   |                |                 |  |              |  |
| Weaving and no<br>speeds, Si (mi/h                    |  | 34.4                       | 0                     | 41                   | .69   |                |                 |  |              |  |
| Number of la<br>Maximum n                             | anes required<br>umber of lanes  | , ,                        |                       |                      | 1.26<br>1.40                                  |                |                 |  |              |  |
|   |  | (max) uncons               |                       |                      |   |                | v (max) constr  | rained operati                               | on           |  |
|   |  |                            |                       |                      | f Service,                                    | and Cap        | acity           |  |              |  |
|   |  | S (mi/h)                   |                       | 39.85                |   |                |                 |  |              |  |
| Weaving seg<br>Level of serv                          | gment density  | , υ (pc/mi/ln)             |                       | 39.55<br>E           |   |                |                 |  |              |  |
|   | base condition   | n c (nc/h)                 |                       | 6645                 |   |                |                 |  |              |  |
|   |  | ow rate, c (vel            | 1/h)                  | 6579                 |   |                |                 |  |              |  |
|   |  | ume, c <sub>h</sub> (veh/h |                       | 5748                 |   |                |                 |  |              |  |
| Notes   | a fall float VOI   | unio, oh (vonin            | ''                    | 3740                 |   |                |                 |  |              |  |
| liance2   |  |                            |                       |                      |   |                |                 |  |              |  |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|   |  |                            | FREEWA                | Y WEAV   | /ING WOF   | RKSHEE         | Γ              |                 |              |  |
|---|--|----------------------------|-----------------------|--|--|----------------|----------------|-----------------|--------------|--|
| General   | Informat   | ion                        |                       |  | Site Info  | rmation        |                |                 |              |  |
| Analyst<br>Agency/Con<br>Date Perforr<br>Analysis Tim | ned  | SEB<br>CHA<br>02/14/<br>PM | 12                    |  |  |                |                |                 | îf           |  |
| Inputs  |  |                            |                       |  |  |                |                |                 |              |  |
| Weaving nu  | e-flow speed, and the speed of lanes, greatly length, L (ft) | 11                         | 56<br>4<br>810<br>Lev |  | Weaving type<br>Volume ratio, VR<br>Weaving ratio, R |                |                | A<br>0.2<br>0.7 |              |  |
| Convers   | sions to p   | c/h Unde                   | r Base C              | ondition   | าร   |                |                |                 |              |  |
| (pc/h)  | V  | PHF                        | Truck %               | RV %   | E <sub>T</sub>                                       | E <sub>R</sub> | $f_{HV}$       | fp              | V            |  |
| $V_{o1}$  | 3310   | 0.92                       | 2                     | 0  | 1.5  | 1.2            | 0.990          | 1.00            | 3633         |  |
| $V_{o2}$  | 0  | 0.92                       | 2                     | 0  | 1.5  | 1.2            | 0.990          | 1.00            | 0            |  |
| $V_{w1}$  | 800  | 0.92                       | 2                     | 0  | 1.5  | 1.2            | 0.990          | 1.00            | 878          |  |
| V <sub>w2</sub>                                       | 140  | 0.92                       | 2                     | 0  | 1.5  | 1.2            | 0.990          | 1.00            | 153          |  |
| V <sub>W</sub>  |  |                            |                       | 1031   | V <sub>nw</sub>                                      |                |                |                 | 3633         |  |
| V   | 1  |                            |                       |  | TIW  | ı              |                |                 | 4664         |  |
| Weaving   | and No   | n-Weavin                   | g Speeds              | <u> </u>   |  |                |                |                 |              |  |
|   |  |                            | Unconstr              | ained  |  |                |                | trained         |              |  |
| <u> </u>  |  | Weaving                    |                       |  | ving (i = nw)  | Weavir         | ng (i = w)     | Non-Wea         | ving ( = nw) |  |
| a (Exhibit 24<br>b (Exhibit 24                        |  | 0.15<br>2.20               |                       |  | .00  |                |                | <u> </u>        |              |  |
| c (Exhibit 24   |  | 0.97                       |                       | <del>,                                      </del> | .30  |                |                |                 |              |  |
| d (Exhibit 24   |  | 0.80                       |                       |  | .75  |                |                |                 |              |  |
| Weaving intensit                                      |  | 1.03                       |                       | 1  | .50  |                |                |                 |              |  |
| Weaving and no<br>speeds, Si (mi/h                    |  | 37.6                       | 1                     | 45   | 5.73   |                |                |                 |              |  |
| Number of la  | anes required  | for unconstrain            | ned operation,        | Nw   | 1.22   |                |                | Į.              |              |  |
| 1   | umber of lanes   |                            |                       |  | 1.40   | = 16.11        |                |                 |              |  |
|   |  | (max) uncons               |                       |  | -  |                | v (max) consti | rained operati  | on           |  |
|   |  | S (mi/h)                   |                       | 43.64  | f Service,   | anu Cap        | acity          |                 |              |  |
|   | gment speed,<br>gment density,                               |                            |                       | 26.72  |  |                |                |                 |              |  |
| Level of serv   |  | D (porinirin)              |                       | C C  |  |                |                |                 |              |  |
|   | pase condition   | , c <sub>h</sub> (pc/h)    |                       | 6619   |  |                |                |                 |              |  |
|   |  | ow rate, c (vel            | n/h)                  | 6553   |  |                |                |                 |              |  |
|   |  | ume, c <sub>h</sub> (veh/h |                       | 6029   |  |                |                |                 |              |  |
| Notes   |  | 11.                        | -                     | 1  |  |                |                |                 |              |  |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

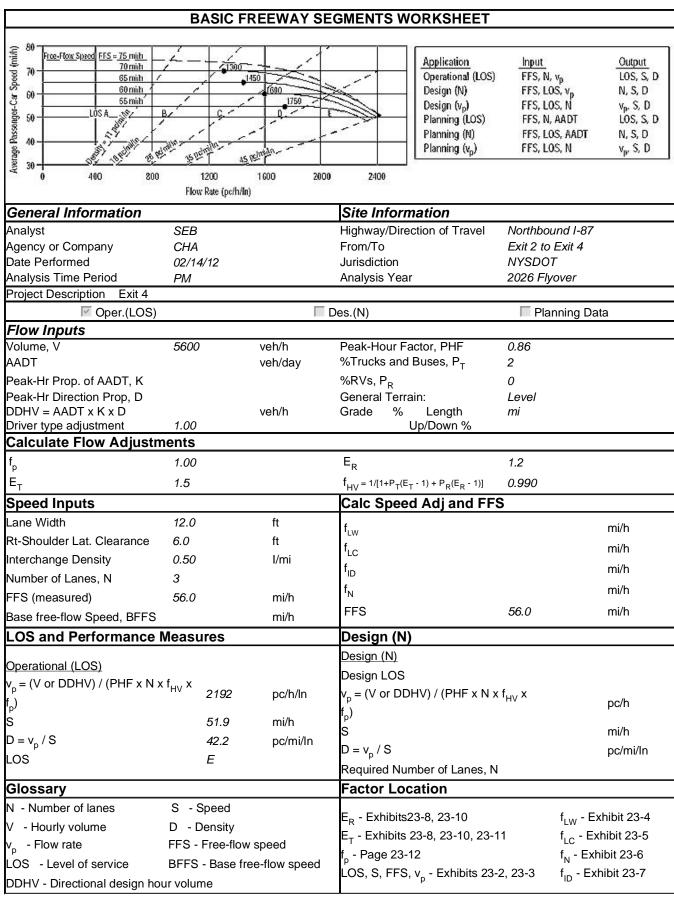
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such



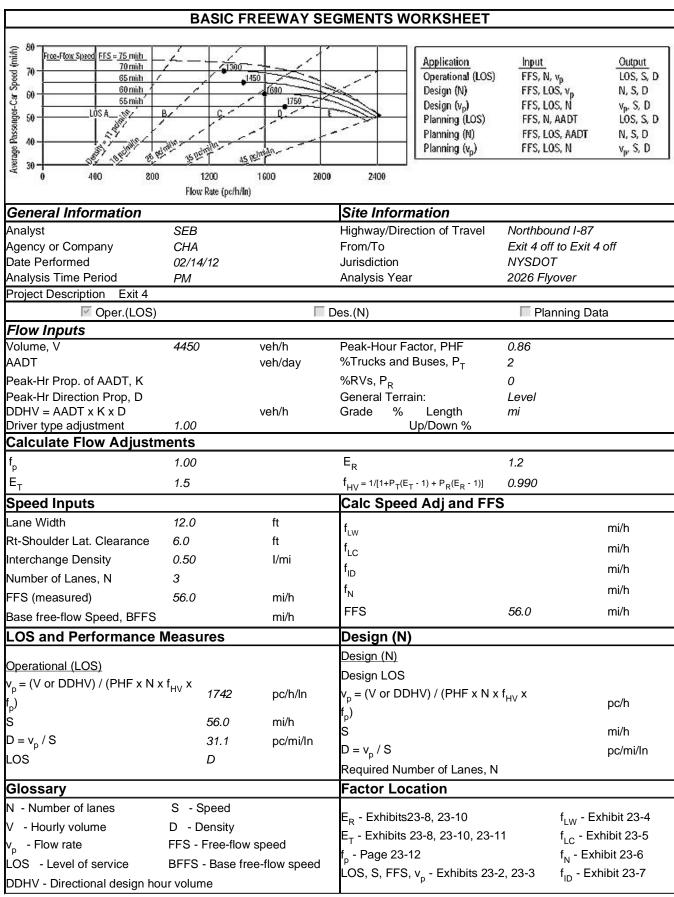
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| Agency or Company CHA From/To Date Performed 02/14/12 Jurisdiction  | Planning (N) FFS, Li Planning (v <sub>p</sub> ) FFS, Li  mation ection of Travel Southbook Exit 4 to NYSDO ar 2026 Fly | OS, v <sub>p</sub> N, S, D OS, N v <sub>p</sub> , S, D I, AADT LOS, S, D OS, AADT N, S, D OS, N v <sub>p</sub> , S, D OUNT I N, S, D OUNT I N, S, D |
|---|--|---|
| Flow Rate (pc/h/ln)  General Information  Analyst  Agency or Company  Date Performed  Flow Rate (pc/h/ln)  Site Information  SEB  Highway/Direction  From/To  Jurisdiction  | ection of Travel Southbook Exit 4 to NYSDO ar 2026 Fly   | ) Exit 2<br>)T<br>yover   |
| Analyst SEB Highway/Direct Agency or Company CHA From/To Date Performed 02/14/12 Jurisdiction   | ection of Travel Southbook Exit 4 to NYSDO ar 2026 Fly   | ) Exit 2<br>)T<br>yover   |
| Agency or Company CHA From/To Date Performed 02/14/12 Jurisdiction  | Exit 4 to NYSDO ar 2026 Fly  | ) Exit 2<br>)T<br>yover   |
| Analysis Time Period PM Analysis Yea Project Description Exit 4   |  | anning Data   |
| ✓ Oper.(LOS) □ Des.(N)  | Factor, PHF 0.92   |   |
| Flow Inputs  Volume, V 4000 veh/h Peak-Hour Fa AADT veh/day %Trucks and Peak-Hr Prop. of AADT, K %RVs, P <sub>R</sub> Peak-Hr Direction Prop, D General Terra DDHV = AADT x K x D veh/h Grade %   | rain: 0<br>Level<br>Length <i>mi</i>   |   |
| Driver type adjustment 1.00  Calculate Flow Adjustments   | Up/Down %  |   |
| f <sub>p</sub> 1.00 E <sub>R</sub>  | 1.2  |   |
|   | $E_T - 1) + P_R(E_R - 1)$ 0.990  |   |
|   | ed Adj and FFS   |   |
| Lane Width 12.0 ft ft $f_{LW}$ Rt-Shoulder Lat. Clearance 6.0 ft $f_{LC}$ Interchange Density 0.50 I/mi Number of Lanes, N 3 FFS (measured) 56.0 mi/h   | 56.0   | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h  |
| base free-flow Speed, BFFS ffilth   |  | ,   |
| $     \begin{bmatrix}       r_p \end{bmatrix} $ $     \begin{bmatrix}       c \\       c \end{bmatrix} $ $     \begin{bmatrix}      $ | •  | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary Factor Loc   |  |   |
| N - Number of lanes  V - Hourly volume  D - Density  FFS - Free-flow speed  OS - Level of service  BEFS - Base free-flow speed  To Page 23-   | \$23-8, 23-10<br>\$ 23-8, 23-10, 23-11   | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_N$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7   |

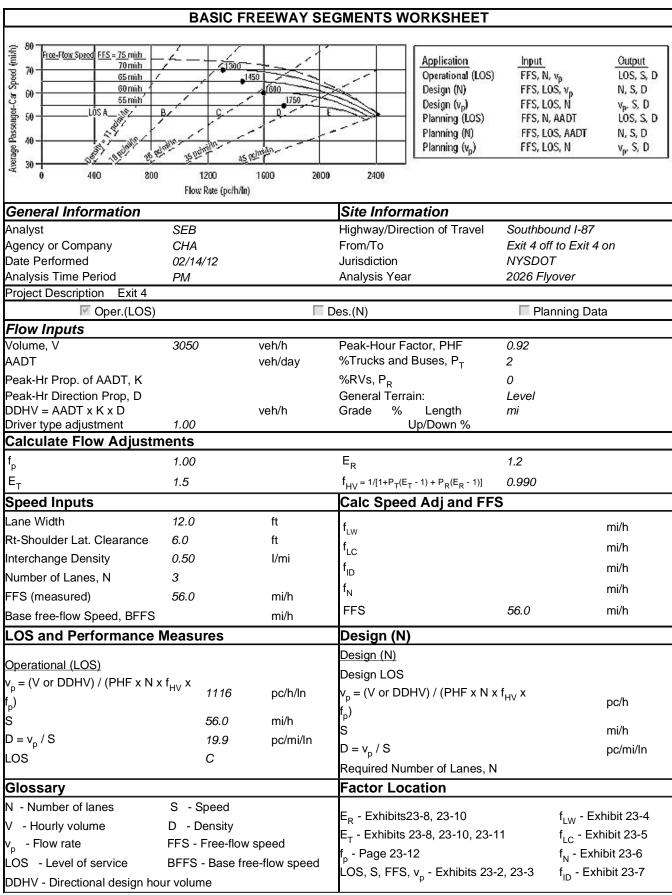
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|  | BASIC F   | REEWAY SE                               | EGMENTS W   | ORKSHEET   |  |   |
|--|---|---|---|--|--|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 70 mith 65 mith 55 mith 55 mith 40 mith 70 mi | B C C   | 450<br>(600<br>1750<br>0<br>1600<br>200 | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO:<br>FFS, LO:<br>FFS, LO:<br>FFS, LO: | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D            |
| General Information  | Flow Rate (pc/h/lin                                   | )                                       | Site Inforn   | nation   |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/14/12<br>PM                          |   |   | ction of Travel  | Northbou<br>Exit 4 off<br>NYSDOT<br>2026 Flyo                    | to Exit 4 on  |
| ✓ Oper.(LOS)   |   |   | Des.(N)   |  | ☐ Plar   | nning Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 4350  | veh/h<br>veh/day                        | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra                            | Buses, P <sub>T</sub>  | 0.86<br>2<br>0<br>Level  |   |
| DDHV = AADT x K x D Driver type adjustment  Calculate Flow Adjustr   | 1.00<br>ments   | veh/h                                   | Grade %   | Length<br>Up/Down %  | mi   |   |
| fp   | 1.00  |   | E <sub>R</sub>  |  | 1.2  |   |
| É <sub>T</sub>   | 1.5   |   | f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>1</sub>   | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |   |
| Speed Inputs   |   |   | Calc Spee   | d Adj and FFS  | 3  |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>3<br>56.0                      | ft<br>ft<br>I/mi<br>mi/h                | $f_{LW}$ $f_{LC}$ $f_{ID}$  |  |  | mi/h<br>mi/h<br>mi/h<br>mi/h  |
| Base free-flow Speed, BFFS   | 00.0  | mi/h                                    | FFS   |  | 56.0   | mi/h  |
| LOS and Performance  | Measures  |   | Design (N)  | <b>)</b>   |  |   |
| Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p)$ $S$ $D = v_p / S$ $LOS$  |   | pc/h/ln<br>mi/h<br>pc/mi/ln             | $\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DD}$ $f_p)$ $S$ $D = v_p / S$ | HV) / (PHF x N x   | f <sub>HV</sub> x  | pc/h<br>mi/h<br>pc/mi/ln  |
| Classer  |   |   |   | mber of Lanes, N   |  |   |
| Glossary  N - Number of lanes  V - Hourly volume  v <sub>p</sub> - Flow rate  LOS - Level of service  DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fro |   | f <sub>p</sub> - Page 23-   | 23-8, 23-10<br>23-8, 23-10, 23-1   |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
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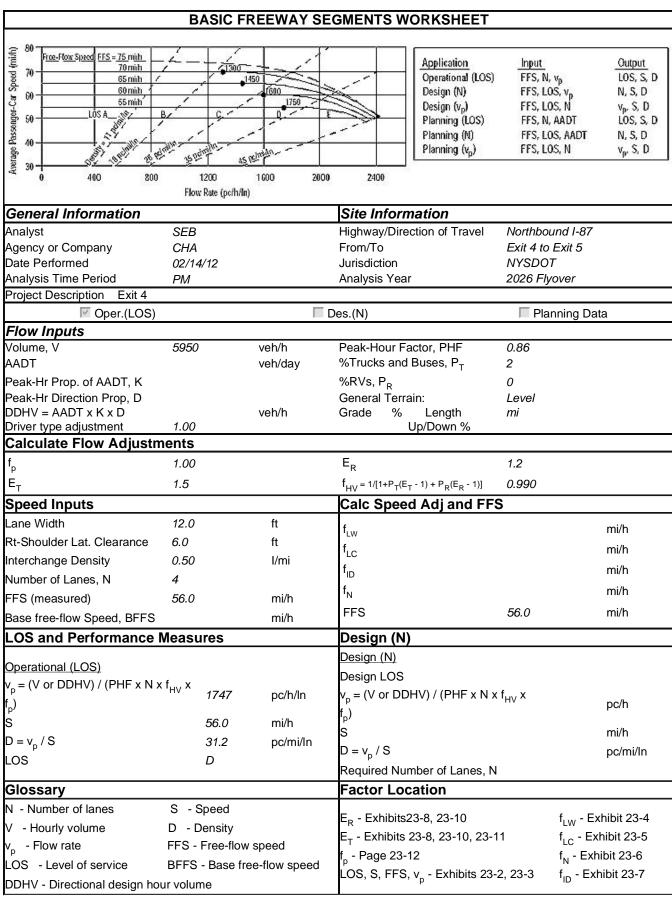
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|  | BASIC F                     | REEWAY SE    | GMENTS W  | ORKSHEET   |   |  |
|--|-----------------------------|--------------|---|--|---|--|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 60 mith 55 mith 50 LOS A 6 | B C C                       | 1500 2001    | 0 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, v<br>FFS, LOS<br>FFS, N, A<br>FFS, LOS<br>FFS, LOS | , v <sub>p</sub> N, S, D<br>, N v <sub>p</sub> , S, D<br>ADT LOS, S, D<br>, AADT N, S, D |
| General Information  | Flow Rate (pc/h/lin         | )            | Site Inforn                                     | nation   |   |  |
| Analyst  | SEB                         |              |   | ction of Travel  | Southbou  | nd I-87  |
| Agency or Company  | CHA                         |              | From/To   | olion of Travel  | Exit 5 to E   |  |
| Date Performed   | 02/14/12                    |              | Jurisdiction                                    |  | NYSDOT  |  |
| Analysis Time Period   | PM                          |              | Analysis Year                                   | r  | 2026 Flyo   | ver  |
| Project Description Exit 4   |                             |              |   |  |   |  |
| Oper.(LOS)   |                             |              | Des.(N)   |  | ☐ Plan  | ning Data  |
| Flow Inputs  |                             |              |   |  |   |  |
| Volume, V  | 3800                        | veh/h        | Peak-Hour Fa                                    | •  | 0.92  |  |
| AADT   |                             | veh/day      | %Trucks and                                     | buses, P <sub>T</sub>  | 2   |  |
| Peak-Hr Prop. of AADT, K   |                             |              | %RVs, P <sub>R</sub><br>General Terra           | _:   | 0   |  |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D   |                             | veh/h        | Grade %   | Length   | Level<br>mi   |  |
| Driver type adjustment   | 1.00                        | 70.4.1       |   | Up/Down %  |   |  |
| Calculate Flow Adjustr   | nents                       |              |   |  |   |  |
| f <sub>p</sub>   | 1.00                        |              | E <sub>R</sub>                                  |  | 1.2   |  |
| E <sub>T</sub>   | 1.5                         |              | $f_{HV} = 1/[1 + P_{T}(E - E)]$                 | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990   |  |
| Speed Inputs   |                             |              |   | d Adj and FFS  | <b>3</b>  |  |
| Lane Width   | 12.0                        | ft           |   |  |   | :/b  |
| Rt-Shoulder Lat. Clearance   | 6.0                         | ft           | f <sub>LW</sub>                                 |  |   | mi/h   |
| Interchange Density  | 0.50                        | I/mi         | $f_{LC}$  |  |   | mi/h   |
| Number of Lanes, N   | 3                           | ,,,,,        | $f_ID$  |  |   | mi/h   |
| FFS (measured)   | <i>56.0</i>                 | mi/h         | $f_N$   |  |   | mi/h   |
|  | 30.0                        |              | FFS   |  | 56.0  | mi/h   |
| Base free-flow Speed, BFFS   | N4                          | mi/h         |   |  |   | •  |
| LOS and Performance  | weasures                    |              | Design (N)                                      |  |   |  |
| Operational (LOS)<br>v <sub>p</sub> = (V or DDHV) / (PHF x N   | x f <sub>HV</sub> x<br>1391 | pc/h/ln      | Design (N) Design LOS v <sub>o</sub> = (V or DD | HV) / (PHF x N x   | f <sub>uv</sub> x   |  |
| f <sub>p</sub> )   |                             | •            | f <sub>p</sub> )                                | , ,  | 117   | pc/h   |
| S  | 56.0                        | mi/h         | S   |  |   | mi/h   |
| $D = v_p / S$  | 24.8                        | pc/mi/ln     | $D = v_p / S$                                   |  |   | pc/mi/ln   |
| LOS  | С                           |              |   | mber of Lanes, N   |   | ρο/ιιι/ιι/   |
| Glossary   |                             |              | Factor Loc                                      |  |   |  |
| N - Number of lanes  | S - Speed                   |              |   |  |   |  |
| V - Hourly volume  | D - Density                 |              | E <sub>R</sub> - Exhibits2                      |  |   | f <sub>LW</sub> - Exhibit 23-4   |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow             | / speed      |   | 23-8, 23-10, 23-1  | 1   | f <sub>LC</sub> - Exhibit 23-5   |
| LOS - Level of service   | BFFS - Base fr              |              | f <sub>p</sub> - Page 23-                       | 12   |   | f <sub>N</sub> - Exhibit 23-6  |
|  |                             | ee-now speed | LOS, S, FFS,                                    | , v <sub>p</sub> - Exhibits 23-2   | 2, 23-3   | f <sub>ID</sub> - Exhibit 23-7   |
| DDHV - Directional design ho   |                             |              |   | Version 5.3  |   | erated: 2/17/2012 1:17   |

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|  | BASIC FI  | REEWAY SE                   | GMENTS W  | ORKSHEET   |   |  |
|--|---|-----------------------------|---|--|---|--|
| 10   10   10   10   10   10   10   10  | B C C   | 150 1750 E                  | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AADT FFS, LOS, N | Output<br>LOS, S, D<br>N, S, D<br>v <sub>p</sub> , S, D<br>LOS, S, D<br>N, S, D<br>v <sub>p</sub> , S, D |
| General Information  | Filow Rate (pc/h/lin)   | 13                          | Site Inform   | nation   |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4                             | CLD<br>CHA<br>07/30/13<br>PM                                    |                             |   | ection of Travel   | Northbound I-8<br>Exit 5 to Exit 6<br>NYSDOT<br>2026 Flyover  | 7  |
| ✓ Oper.(LOS)   |   |                             | Des.(N)   |  | ☐ Planning [  | Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 6175  | veh/h<br>veh/day            | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terr                 | l Buses, P <sub>T</sub>  | 0.86<br>2<br>0<br>Level   |  |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00  | veh/h                       | Grade %   | Length<br>Up/Down %  | mi  |  |
| Calculate Flow Adjustr   |   |                             |   |  | 4.0   |  |
| f <sub>p</sub> □   | 1.00<br>1.5   |                             | E <sub>R</sub>  | . 4) . D (5 4)1  | 1.2<br>0.990  |  |
| E <sub>⊤</sub><br>Speed Inputs   | 1.5   |                             |   | ed Adj and FFS   |   |  |
| Lane Width<br>Rt-Shoulder Lat. Clearance<br>Interchange Density<br>Number of Lanes, N                                | 12.0<br>6.0<br>0.50<br>4  | ft<br>ft<br>I/mi            | f <sub>LW</sub><br>f <sub>LC</sub><br>f <sub>ID</sub>                               | a Auj ana 11 o   |   | mi/h<br>mi/h<br>mi/h<br>mi/h   |
| FFS (measured)   | 56.0  | mi/h                        | f <sub>N</sub>  |  | 50.0  |  |
| Base free-flow Speed, BFFS   |   | mi/h                        | FFS   |  | 56.0  | mi/h   |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ )  S $D = v_p / S$ LOS     |   | pc/h/ln<br>mi/h<br>pc/mi/ln | $f_p$ )<br>S<br>D = $v_p$ / S   | )<br>DHV) / (PHF x N x t<br>mber of Lanes, N   | f <sub>HV</sub> x   | pc/h<br>mi/h<br>pc/mi/ln   |
| Glossary   |   |                             | Factor Loc  | · · · · · · · · · · · · · · · · · · ·  |   |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho | S - Speed D - Density FFS - Free-flow BFFS - Base freeur volume | •                           | E <sub>R</sub> - Exhibits<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1 f <sub>LC</sub> - I<br>f <sub>N</sub> - E   | Exhibit 23-4<br>Exhibit 23-5<br>xhibit 23-6<br>Exhibit 23-7  |
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|  | BASIC F   | REEWAY SE                | GMENTS W  | ORKSHEET   |  |  |
|--|---|--------------------------|---|--|--|--|
| 10   10   10   10   10   10   10   10  | B C C   | 150 (600) 1750 E         | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AAD FFS, LOS, N | Output  LOS, S, D  N, S, D  v <sub>p</sub> , S, D  LOS, S, D  N, S, D  v <sub>p</sub> , S, D |
| General Information  | Flow Rate (pc/h/ln)   |                          | Site Inform   | nation   |  |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4                             | CLD<br>CHA<br>07/30/13<br>PM                                      |                          | -   | ection of Travel   | Southbound I-<br>Exit 6 to Exit 5<br>NYSDOT<br>2026 Flyover  |  |
| ✓ Oper.(LOS)   |   |                          | Des.(N)   |  | ☐ Planning   | Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 3650  | veh/h<br>veh/day         | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terr                 | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level  |  |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00  | veh/h                    | Grade %   | Length<br>Up/Down %  | mi   |  |
| Calculate Flow Adjustr   |   |                          |   |  | 4.0  |  |
| f <sub>p</sub><br> Ε <sub>Τ</sub>  | 1.00<br>1.5   |                          | E <sub>R</sub>  | 4) . D /E 4)1  | 1.2<br>0.990   |  |
| Speed Inputs   | 1.5   |                          |   | d Adj and FFS  |  |  |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)                          | 12.0<br>6.0<br>0.50<br>4<br>56.0                                  | ft<br>ft<br>I/mi<br>mi/h | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub>                      | a Aajana i i o   |  | mi/h<br>mi/h<br>mi/h<br>mi/h   |
| Base free-flow Speed, BFFS   |   | mi/h                     | FFS   |  | 56.0   | mi/h   |
| LOS and Performance  |   |                          | Design (N   | )  |  |  |
| Operational (LOS)  v <sub>p</sub> = (V or DDHV) / (PHF x N : f <sub>p</sub> )  |   | pc/h/ln                  | Design (N) Design LOS $v_p = (V \text{ or DD})$                                     | 0HV) / (PHF x N x  | f <sub>HV</sub> x  | pc/h   |
| S<br>D = v <sub>p</sub> / S<br>LOS   | 56.0<br>17.9<br>B   | mi/h<br>pc/mi/ln         | $f_p$ ) $S$ $D = v_p / S$ Required Nu   | mber of Lanes, N   |  | mi/h<br>pc/mi/ln   |
| Glossary   |   |                          | Factor Loc  | · · · · · · · · · · · · · · · · · · ·  |  |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho | S - Speed D - Density FFS - Free-flow BFFS - Base freedour volume | •                        | E <sub>R</sub> - Exhibits<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1 f <sub>LC</sub> -  | Exhibit 23-4 Exhibit 23-5 Exhibit 23-6 Exhibit 23-7  |
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|   | RAI                                       | MPS AND                       | RAMP JUNG           | <u> </u>   | OKKSHE   | <u> </u>                           |                          |                                     |                      |  |  |  |
|---|---|-------------------------------|---------------------|--|--|------------------------------------|--------------------------|-------------------------------------|----------------------|--|--|--|
| General Infor   | mation                                    |                               |                     | Site Infor                                       | mation   |                                    |                          |                                     |                      |  |  |  |
| Analyst   | SEB                                       |                               | Fre                 | eeway/Dir of Tra                                 | avel   | Northbound I-8                     | 7                        |                                     |                      |  |  |  |
| gency or Company                                      | CHA                                       |                               | Ju                  | nction   |  | Exit 2W On-Ra                      | mp                       |                                     |                      |  |  |  |
| Pate Performed 02/14/12 Jurisdiction                  |   |                               |                     | NYSDOT   |  |                                    |                          |                                     |                      |  |  |  |
| nalysis Time Period                                   | PM  |                               | An                  | alysis Year                                      | 2026 Flyover   |                                    |                          |                                     |                      |  |  |  |
| Project Description                                   | Exit 4                                    |                               |                     |  |  | ·                                  |                          |                                     |                      |  |  |  |
| nputs   |   |                               |                     |  |  |                                    |                          |                                     |                      |  |  |  |
| pstream Adj Ramp                                      |   | Terrain: Level                |                     |  |  |                                    |                          | Downstre<br>Ramp                    | eam Adj              |  |  |  |
| ▼ Yes ☐ On  |   |                               |                     |  |  |                                    |                          | ☐ Yes                               | □ On                 |  |  |  |
| No  | :   |                               |                     |  |  |                                    |                          | ✓ No                                | ☐ Off                |  |  |  |
| L <sub>up</sub> = 1100 ft                             |   |                               |                     | <u> </u>   | 0.0 mnh  |                                    | L <sub>down</sub> =      | ft                                  |                      |  |  |  |
| / <sub>u</sub> = 840 ve                               | eh/h                                      | 3                             | = 56.0 mph          | show lanes, L <sub>A</sub> ,                     | $S_{FR} = 4$   | o.o mpn                            |                          | $V_D =$                             | veh/h                |  |  |  |
| Conversion to   |   | dor Poss C                    |                     | silow lailes, L <sub>A</sub> ,                   | LD' R' Vf  |                                    |                          |                                     |                      |  |  |  |
| onversion to  | y pc/n one                                | der base C                    | onanions            | ı  | 1  | 1                                  | 1                        |                                     |                      |  |  |  |
| (pc/h)  | v<br>(Veh/hr)                             | PHF                           | Terrain             | %Truck   | %Rv  | $f_{HV}$                           | fp                       | v = V/PH                            | $F x f_{HV} x f_{p}$ |  |  |  |
| reeway  | 4750                                      | 0.86                          | Level               | 2  | 0  | 0.990                              | 1.00                     |                                     | 5578                 |  |  |  |
| Ramp  | 870                                       | 0.92                          | Level               | 2  | 0  | 0.990                              | 1.00                     | _                                   | 955                  |  |  |  |
| JpStream  | 840                                       | 0.92                          | Level               | 2  | 0  | 0.990                              | 1.00                     | +                                   | 922                  |  |  |  |
| DownStream  | 040                                       | 0.72                          | LCVCI               |  |  | 0.770                              | 1.00                     | +                                   | 722                  |  |  |  |
| own ou cam  |   | Merge Areas                   |                     |  |  | 1                                  | Diverge Are              | eas                                 |                      |  |  |  |
| stimation of  |   | g                             |                     |  | Estimation of V <sub>12</sub>                                      |                                    |                          |                                     |                      |  |  |  |
|   |   | (D.)                          |                     |  |  | 12                                 |                          |                                     |                      |  |  |  |
|   | $V_{12} = V_F$                            |                               |                     |  |  | V <sub>12</sub>                    | $= V_R + (V_F - V_F)$    | - V <sub>R</sub> )P <sub>FD</sub>   |                      |  |  |  |
| L <sub>EQ</sub> = 1465.26 (Equation 25-2 or 25-3)     |   |                               |                     | L <sub>EQ</sub> = (Equation 25-8 or 25-9)        |  |                                    |                          |                                     |                      |  |  |  |
| P <sub>FM</sub> = 0.578 using Equation (Exhibit 25-5) |   |                               |                     | P <sub>FD</sub> = using Equation (Exhibit 25-12) |  |                                    |                          |                                     |                      |  |  |  |
| $V_{12} = 3225 \text{ pc/h}$                          |   |                               |                     | $V_{12} = pc/h$                                  |  |                                    |                          |                                     |                      |  |  |  |
| 0050 // /5 // 05 / 05                                 |   |                               |                     |  |  |                                    |                          |                                     |                      |  |  |  |
| <sub>3</sub> or V <sub>av34</sub>                     | 5)  | (—                            |                     |  | V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 25-15 or 25-16) |                                    |                          |                                     |                      |  |  |  |
| Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes V No         |   |                               |                     |  | Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No    |                                    |                          |                                     |                      |  |  |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5 *         | V₁√2                                      | s ▼ No                        |                     |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                     |                                    |                          |                                     |                      |  |  |  |
| Yes, V <sub>12a</sub> =                               |   | (Equation 25                  | .8)                 |  | If Yes,V <sub>12a</sub> = pc/h (Equation 25-18)                    |                                    |                          |                                     |                      |  |  |  |
|   | ·   | (Equation 25                  | -0)                 |  | 120  |                                    | . , ,                    |                                     |                      |  |  |  |
| Capacity Che  |   |                               |                     | 1 100 50   | Capacity   | y Checks                           | . 1                      | 0 "                                 | 1 100 50             |  |  |  |
|   | Actual                                    | Ca                            | pacity              | LOS F?   | <u> </u>   | Actu                               |                          | Capacity                            | LOS F3               |  |  |  |
|   |   |                               |                     |  | V <sub>F</sub>   |                                    | Exhibit                  | 25-14                               |                      |  |  |  |
| $V_{FO}$  | 6533                                      | Exhibit 25-7                  |                     | No   | $V_{FO} = V_{F}$   | - V <sub>R</sub>                   | Exhibit                  | 25-14                               |                      |  |  |  |
|   |   |                               |                     |  | V <sub>R</sub>   |                                    | Exhibit                  | 25-3                                |                      |  |  |  |
| low Entering  | Morgo In                                  | I I                           | <u> </u>            | <u> </u>   | <i>-</i>   | toring Di                          | erge Infl                |                                     |                      |  |  |  |
| TOW LINEINIG  | Actual                                    | T .                           | esirable            | Violation?                                       | FIOW EII   | Actual                             |                          | Desirable                           | Violation?           |  |  |  |
| V   | 4180                                      | Exhibit 25-7                  | 4600:All            | No   | V <sub>12</sub>  | Actual                             | Exhibit 25-              |                                     | violation?           |  |  |  |
| V <sub>R12</sub>                                      |   |                               |                     | INU  | <del></del>  | Comdet                             |                          |                                     | <u> </u>             |  |  |  |
| evel of Serv  |   |                               |                     |  | 1  |                                    | Determina                |                                     | ot r)                |  |  |  |
|   | 11  | 0.0078 V <sub>12</sub> - 0.00 | J62/ L <sub>A</sub> |  |  | $J_{R} = 4.252 -$                  | - 0.0086 V <sub>12</sub> | <sub>2</sub> - 0.009 L <sub>D</sub> |                      |  |  |  |
| D <sub>R</sub> = 32.3 (pc/mi/ln)                      |   |                               |                     | D <sub>R</sub> = (pc/mi/ln)                      |  |                                    |                          |                                     |                      |  |  |  |
| LOS = D (Exhibit 25-4)                                |   |                               |                     | LOS = (Exhibit 25-4)                             |  |                                    |                          |                                     |                      |  |  |  |
| Speed Determination                                   |   |                               |                     | Speed Determination                              |  |                                    |                          |                                     |                      |  |  |  |
| •   |   |                               |                     |  | <del>                                     </del>                   | xhibit 25-19)                      |                          |                                     |                      |  |  |  |
| ,   |   |                               |                     | 3  |  |                                    |                          |                                     |                      |  |  |  |
| -   | S <sub>R</sub> = 48.9 mph (Exhibit 25-19) |                               |                     |  | S <sub>R</sub> = mph (Exhibit 25-19)                               |                                    |                          |                                     |                      |  |  |  |
| R= 48.9 mph (   |   |                               |                     |  | c  | L /E L !! !! O=                    | 10)                      |                                     |                      |  |  |  |
| R= 48.9 mph (<br>0= 49.2 mph (                        | Exhibit 25-19) Exhibit 25-14)             |                               |                     |  | * ·  | oh (Exhibit 25-<br>oh (Exhibit 25- |                          |                                     |                      |  |  |  |

| •   | 4.                               | KAIVIE  | S AND RAM                |  |  |                                |           |  |  |           |  |  |
|---|----------------------------------|---|--------------------------|--|--|--------------------------------|-----------|--|--|-----------|--|--|
| General Info  |                                  |   |                          | Site Infor   |  |                                |           |  |  |           |  |  |
| Analyst SEB Agency or Company CHA Date Performed 02/14/12   |                                  | Freeway/Dir of Travel<br>Junction<br>Jurisdiction |                          |  | Exit 4 NB Off to ASR<br>NYSDOT   |                                |           |  |  |           |  |  |
| Analysis Time Per<br>Project Description  |                                  |   | A                        | nalysis Year   |  | 2026 F                         | lyover    |  |  |           |  |  |
| Inputs  | II EXIL4                         |   |                          |  |  |                                |           |  |  |           |  |  |
| •   |                                  | Terrain: Leve                                     | 1                        |  |  |                                |           |  | Daywastras                             | na A ali  |  |  |
| Upstream Adj Ran  | ·                                |   |                          |  |  |                                |           |  | Downstrea<br>Ramp                      | -         |  |  |
|   |                                  |   |                          |  |  |                                |           |  | ✓ Yes                                  | ☐ On      |  |  |
| ✓ No  | Off                              |   |                          |  |  |                                |           |  | □ No                                   | ✓ Off     |  |  |
| L <sub>up</sub> = ft  |                                  | S   | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4  | 10.0 mi                        | oh        |  | L <sub>down</sub> =                    | 2600 ft   |  |  |
| V <sub>u</sub> = veh  | n/h                              |   | • •                      | show lanes, L <sub>A</sub>   |  |                                |           |  | V <sub>D</sub> =                       | 120 veh/  |  |  |
| Conversion  | to pc/h Un                       | der Base (  | Conditions               |  |  |                                |           |  |  |           |  |  |
| (pc/h)  | V<br>(Veh/hr)                    | PHF   | Terrain                  | %Truck   | %Rv  | f <sub>HV</sub> f <sub>p</sub> |           | f <sub>p</sub>                         | $v = V/PHF \times f_{HV} \times f_{I}$ |           |  |  |
| Freeway   | 5600                             | 0.86  | Level                    | 2  | 0  | 0                              | .990      | 1.00                                   | 6577                                   |           |  |  |
| Ramp  | 1170                             | 0.86  | Level                    | 2  | 0  | 0                              | .990      | 1.00                                   | 1374                                   |           |  |  |
| UpStream<br>DownStream  | 120                              | 0.0/  | Lovel                    | 1  |  | +                              | 005       | 1.00                                   | 14                                     | 0         |  |  |
| Downsteam   | 120                              | 0.86<br>Merge Areas                               | Level                    | 1  | 0  | 0                              | .995      | 1.00<br>Diverge Areas                  | 14                                     | 0         |  |  |
| Estimation  |                                  | morgo / irous                                     |                          |  | Estimation of V <sub>12</sub>  |                                |           |  |  |           |  |  |
|   | V <sub>12</sub> = V <sub>F</sub> | (D)   |                          |  | +  |                                |           | = V <sub>R</sub> + (V <sub>F</sub> - V | /D                                     |           |  |  |
| l -   |                                  |   | 25-2)                    |  |  |                                |           |  | –                                      | 5 O)      |  |  |
| L <sub>EQ</sub> = (Equation 25-2 or 25-3) P <sub>FM</sub> = using Equation (Exhibit 25-5)                           |                                  |   |                          | $L_{EQ}$ = 324.22 (Equation 25-8 or 25-9)<br>$P_{FD}$ = 0.532 using Equation (Exhibit 25-12) |  |                                |           |  |  |           |  |  |
|   |                                  |   |                          |  | $V_{12} = V_{12} = V_{12}$ 4144 pc/h   |                                |           |  |  |           |  |  |
| V <sub>12</sub> = pc/h  |                                  |   |                          |  | V <sub>3</sub> or V <sub>av34</sub> 2433 pc/h (Equation 25-15 or 25-16   |                                |           |  |  |           |  |  |
| $V_3$ or $V_{av34}$ pc/h (Equation 25-4 or 25-5)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |                                  |   |                          |  | $V_{3}$ or $V_{av34}$ 2433 pc/n (Equation 25-15 of 25-16 ls $V_{3}$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |                                |           |  |  |           |  |  |
| Is $V_3$ or $V_{av34} > 2$ .  |                                  |   |                          |  |  |                                |           |  |  |           |  |  |
| If Yes, V <sub>12a</sub> =  | :=                               | (Equation 25                                      | -8)                      |  | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No<br>If Yes, $V_{12a} = pc/h$ (Equation 25-18)                                |                                |           |  |  |           |  |  |
| Capacity Cl   |                                  | (Equation 20                                      | -0)                      |  | Capacity   |                                |           | DO/II (Equation                        | 123-10)                                |           |  |  |
| Capacity Ci   | Actual                           |   | apacity                  | LOS F?   | Capacity   | y Ch                           | Actual    | Ca                                     | pacity                                 | LOS F     |  |  |
|   | Actual                           | <del>† Ť</del>                                    | араску                   | LOST:  | V <sub>F</sub>   |                                | 6577      | Exhibit 25-1                           | <u> </u>                               | No        |  |  |
| V <sub>FO</sub>   |                                  | Exhibit 25-7                                      |                          |  | $V_{FO} = V_{F}$   | - \/                           | 5203      | Exhibit 25-1                           | _                                      | No        |  |  |
| ₹FO   |                                  | LAHIDIL 25-7                                      |                          |  | V <sub>FO</sub> - V <sub>F</sub>   | *R                             |           | <del></del>                            |  |           |  |  |
|   |                                  | <u> </u>  |                          |  | <del></del>  |                                | 1374      | Exhibit 25-3 2100                      |  | No        |  |  |
| Flow Entering Merge Influence Area  Actual Max Desirable Violation?   |                                  |   |                          |  | Flow Entering Diverge Influence Area  Actual Max Desirable V   |                                |           |  |  | Violation |  |  |
| V <sub>R12</sub>  | Actual                           | Exhibit 25-7                                      | DESILANIE                | Violation?   | V <sub>12</sub>  | +                              | 4144      | Exhibit 25-14                          | 4400:All                               | No        |  |  |
| Level of Se   | rvice Deter                      |   | f not F)                 | 1  |  |                                |           | eterminatio                            |  |           |  |  |
|   | 0.00734 v <sub>R</sub> +         | •   |                          |  |  |                                |           | ).0086 V <sub>12</sub> - 0.            | •                                      | ,         |  |  |
|   |                                  | 0.0070 V <sub>12</sub>                            | 0.00027 L <sub>A</sub>   |  |  |                                |           |  | _D                                     |           |  |  |
| $D_R = (pc/mi/ln)$<br>LOS = (Exhibit 25-4)  |                                  |   |                          | D <sub>R</sub> = 33.6 (pc/mi/ln)<br>LOS = D (Exhibit 25-4)                                   |  |                                |           |  |  |           |  |  |
| Speed Determination   |                                  |   |                          | Speed Determination  |  |                                |           |  |  |           |  |  |
|   |                                  |   |                          |  |  |                                | xhibit 25 |  |  |           |  |  |
| ,   | 25-19)                           |   |                          |  |  |                                |           | ,                                      |  |           |  |  |
| S <sub>R</sub> = mph (Exhibit 25-19)  |                                  |   |                          |  |  |                                |           |  |  |           |  |  |
| $S_0$ = mph (Exhibit 25-19)<br>S = mph (Exhibit 25-14)  |                                  |   |                          |  | S <sub>0</sub> = 55.8 mph (Exhibit 25-19)<br>S = 51.5 mph (Exhibit 25-15)  |                                |           |  |  |           |  |  |
|   | AHIDIL 20-141                    |   |                          |  | - 1 - 1 h  | nnn)                           | — vriinit | ZD-1D1                                 |  |           |  |  |

|  | , -            | NAME   | S AND RAN                |  |   | KKSI             |                |                            |                     |                                    |
|--|----------------|--|--------------------------|--|---|------------------|----------------|----------------------------|---------------------|------------------------------------|
| General Infor  |                |  |                          | Site Infor   |   |                  |                |                            |                     |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | 02/14          |  | J                        | reeway/Dir of Tra<br>unction<br>urisdiction<br>analysis Year |   |                  |                | /olf                       |                     |                                    |
| Project Description  |                |  |                          |  |   |                  | , , , , , ,    |                            |                     |                                    |
| Inputs   |                |  |                          |  |   |                  |                |                            |                     |                                    |
| Upstream Adj Ramp  |                | Terrain: Level                                   |                          |  |   |                  |                |                            | Downstrea<br>Ramp   | m Adj                              |
| Yes Or   | 1              |  |                          |  |   |                  |                |                            | '                   | □ On                               |
| ■ No ■ Of  | f              |  |                          |  |   |                  |                |                            | ™ No                | ☐ Off                              |
| L <sub>up</sub> = 2600   | ft             |  | <sub>FF</sub> = 56.0 mph |  | S 4                                       | 0.0 mnh          |                |                            | L <sub>down</sub> = | ft                                 |
| V <sub>u</sub> = 1170 ·  | veh/h          | 3  | • •                      | ( show lanes, L <sub>A</sub> ,                               | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$          | o.o mpi          | ı              |                            | V <sub>D</sub> =    | veh/h                              |
| Conversion t   | o pc/h Und     | der Base (                                       | Conditions               |  |   |                  |                |                            |                     |                                    |
| (pc/h)   | V<br>(Veh/hr)  | PHF  | Terrain                  | %Truck   | %Rv                                       | f                | :<br>HV        | f <sub>p</sub>             | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 4450           | 0.86   | Level                    | 2  | 0   | 0.9              | 90             | 1.00                       | 522                 | 26                                 |
| Ramp   | 120            | 0.86   | Level                    | 2  | 0   |                  | 90             | 1.00                       | 14                  |                                    |
| UpStream   | 1170           | 0.86   | Level                    | 1  | 0   | 0.9              | 95             | 1.00                       | 136                 | 57                                 |
| DownStream   |                | Merge Areas                                      |                          |  |   |                  |                | <br>Diverge Areas          |                     |                                    |
| Estimation o   |                | werge 711 cus                                    |                          |  | Estimati                                  | ion o            |                | or or ge meas              |                     |                                    |
|  |                | /D \   |                          |  |   |                  |                | \/ . (\/ \/                | \D                  |                                    |
| I _  | $V_{12} = V_F$ |  | 25 2)                    |  |   |                  |                | $= V_R + (V_F - V_I)$      |                     |                                    |
| L <sub>EQ</sub> =  |                | ation 25-2 or                                    |                          |  | L <sub>EQ</sub> =                         |                  |                | Equation 25-8              |                     | L# 0E 10\                          |
| P <sub>FM</sub> =  | _              | Equation (E                                      | XIIIDIL 20-0)            |  | P <sub>FD</sub> =                         |                  |                | 623 using Eq               | juation (Exni       | DII 25-12)                         |
| V <sub>12</sub> =<br>V <sub>3</sub> or V <sub>av34</sub>               | pc/h           | /Equation 25                                     | 1 or 25 5)               |  | V <sub>12</sub> =                         |                  |                | 308 pc/h                   | ation OF 1F         | o= 0E 4/                           |
| $V_3 \text{ or } V_{av34}$ Is $V_3 \text{ or } V_{av34} > 2,70$        |                | (Equation 25                                     | -4 01 25-5)              |  | V <sub>3</sub> or V <sub>av34</sub>       | × 2.70           |                | 918 pc/h (Equ<br>TYes ☑ No | alion 25-15         | 01 25-16                           |
| Is $V_3$ or $V_{av34} > 2.76$<br>Is $V_3$ or $V_{av34} > 1.5$          |                |  |                          |  |   |                  |                | Yes No                     |                     |                                    |
| If Yes, $V_{12a} =$  | ·=             | s i i No<br>(Equation 25                         | 0)                       |  | If Yes, $V_{12a} =$                       |                  |                | c/h (Equation              | 25 10)              |                                    |
|  |                | (Equation 25                                     | -0)                      |  |   |                  |                | oc/ii (Equation            | 23-10)              |                                    |
| Capacity Che   | Actual         | I c.   | apacity                  | LOS F?   | Capacity                                  | y Che            |                | 1 00                       | n a aitu            | LOS F                              |
|  | Actual         | C.   | эрасну                   | LUSF?  | V <sub>F</sub>                            | -                | Actual<br>5226 | Exhibit 25-1               | pacity<br>4 6780    | No                                 |
| M  |                | F 1 11 11 0F 7                                   |                          |  | -   | \ <u>\</u>       |                | _                          |                     | +                                  |
| V <sub>FO</sub>  |                | Exhibit 25-7                                     |                          |  | $V_{FO} = V_{F}$                          | - v <sub>R</sub> | 5085           | Exhibit 25-1               | _                   | No                                 |
|  |                |  |                          |  | V <sub>R</sub>                            |                  | 141            | Exhibit 25-3               |                     | No                                 |
| Flow Entering  |                | 1  |                          | \#\#\ C  | Flow En                                   |                  |                | rge Influen                |                     | 10.1.1                             |
| 17   | Actual         | <del>*                                    </del> | Desirable                | Violation?   | 1/  |                  | ctual          | Max Desirat                |                     | Violation                          |
| V <sub>R12</sub>   | ioo Data       | Exhibit 25-7                                     | f not F                  |  | V <sub>12</sub>                           |                  | 308            | Exhibit 25-14              | 4400:All            | No                                 |
| Level of Serv  |                | •  |                          |  |   |                  |                | terminatio                 |                     | <u> </u>                           |
| $D_R = 5.475 + 0.0$  |                | 0.0078 V <sub>12</sub> -                         | U.UU627 L <sub>A</sub>   |  |   |                  |                | .0086 V <sub>12</sub> - 0. | υυ9 L <sub>D</sub>  |                                    |
| D <sub>R</sub> = (pc/mi/   |                |  |                          |  |   | % (pc/           | •              |                            |                     |                                    |
| LOS = (Exhib   |                |  |                          |  |   | •                | it 25-4)       |                            |                     |                                    |
| Speed Deterr   | nination       |  |                          |  | Speed D                                   |                  |                |                            |                     |                                    |
| M <sub>S</sub> = (Exibit 2   | 5-19)          |  |                          |  | . "                                       | •                | hibit 25       | •                          |                     |                                    |
| S <sub>R</sub> = mph (Exh  | nibit 25-19)   |  |                          |  | S <sub>R</sub> = 50.7 mph (Exhibit 25-19) |                  |                |                            |                     |                                    |
| S <sub>0</sub> = mph (Exh  | nibit 25-19)   |  |                          |  | $S_0 = 57$                                | .9 mph           | (Exhibit       | 25-19)                     |                     |                                    |
|  | ibit 25-14)    |  |                          |  | S = 53                                    |                  |                | 25-15)                     |                     |                                    |

|  |   | KAMP             | AND RAM                  |  |   | KNO                        | псст            |   |                     |                                    |
|--|---|------------------|--------------------------|--|---|----------------------------|-----------------|---|---------------------|------------------------------------|
| General Infor                                  | mation                                  |                  |                          | Site Infor   |   |                            |                 |   |                     |                                    |
| Analyst<br>Agency or Company<br>Date Performed | 02/14                                   |                  | Ju<br>Ju                 | eeway/Dir of Tr<br>nction<br>risdiction                          | <br>  | Southb<br>Exit 2W<br>NYSDC | / Off<br>DT     |   |                     |                                    |
| Analysis Time Period                           |   |                  | Ar                       | nalysis Year   | -   | 2026 F                     | lyover          |   |                     |                                    |
| Project Description                            | Exit 4                                  |                  |                          |  |   |                            |                 |   |                     |                                    |
| Inputs   |   | Terrain: Level   |                          |  |   |                            |                 |   |                     |                                    |
| Upstream Adj Ramp                              |   | Terrain. Lever   |                          |  |   |                            |                 |   | Downstrea<br>Ramp   | m Adj                              |
| ✓ No ☐ Of                                      |   |                  |                          |  |   |                            |                 |   | ✓ Yes               | ☑ On                               |
| IM NO III OI                                   | I                                       |                  |                          |  |   |                            |                 |   | □ No                | ☐ Off                              |
| $L_{up} = ft$                                  |   | S                | <sub>FF</sub> = 56.0 mph |  | S <sub>FR</sub> = 4   | 0.0 mp                     | h               |   | L <sub>down</sub> = | 1300 ft                            |
| V <sub>u</sub> = veh/h                         |   |                  | Sketch (                 | show lanes, L <sub>A</sub>                                       |   |                            |                 |   | V <sub>D</sub> =    | 840 veh/                           |
| Conversion t                                   |   | der Base C       | Conditions               |  |   |                            |                 |   |                     |                                    |
| (pc/h)   | V<br>(Veh/hr)                           | PHF              | Terrain                  | %Truck   | %Rv   | $\perp$                    | f <sub>HV</sub> | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 4000                                    | 0.92             | Level                    | 2  | 0   | 0.                         | 990             | 1.00  | 439                 | 91                                 |
| Ramp   | 450                                     | 0.92             | Level                    | 2  | 0   | 0.                         | 990             | 1.00  | 49                  | 4                                  |
| UpStream                                       | 0.40                                    | 0.00             |                          |  |   | +                          | 000             | 1.00  | 00                  |                                    |
| DownStream                                     | 840                                     | 0.92 Merge Areas | Level                    | 2  | 0   | 0.                         | 990             | 1.00<br>Diverge Areas                               | 92                  | 2                                  |
| Estimation of                                  |   | ivier ge Areas   |                          |  | Estimati  | ion o                      |                 | Diverge Areas                                       |                     |                                    |
|  |   | (D.)             |                          |  | 200,,,,,  |                            |                 | ., ., .,  | \_                  |                                    |
|  | $V_{12} = V_F$                          |                  |                          |  | 1   |                            |                 | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> |                     |                                    |
| L <sub>EQ</sub> =                              |   | ation 25-2 or    |                          |  | L <sub>EQ</sub> =   |                            |                 | Equation 25-8                                       |                     |                                    |
| P <sub>FM</sub> =                              | _                                       | Equation (E      | khibit 25-5)             |  | P <sub>FD</sub> =   |                            |                 | .628 using Eq                                       | uation (Exhi        | bit 25-12)                         |
| V <sub>12</sub> =                              | pc/h                                    |                  |                          |  | V <sub>12</sub> =   |                            |                 | 939 <b>pc/h</b>                                     |                     |                                    |
| $V_3$ or $V_{av34}$                            |   | (Equation 25     | -4 or 25-5)              |  | $V_3$ or $V_{av34}$   |                            |                 | 452 pc/h (Equ                                       | ation 25-15         | or 25-16                           |
| Is $V_3$ or $V_{av34} > 2,70$                  |   |                  |                          |  |   |                            |                 | Tyes  ✓ No  |                     |                                    |
| Is $V_3$ or $V_{av34} > 1.5$                   |   |                  |                          |  |   |                            |                 | TYes   ✓ No   |                     |                                    |
| f Yes,V <sub>12a</sub> =                       | pc/h                                    | (Equation 25     | -8)                      |  | If Yes,V <sub>12a</sub> =   | :                          | ŗ               | oc/h (Equation                                      | 25-18)              |                                    |
| Capacity Che                                   | cks                                     |                  |                          |  | Capacity  | y Ch                       | ecks            |   |                     |                                    |
|  | Actual                                  | Ca               | pacity                   | LOS F?   |   | $\Box$                     | Actual          | Ca  | pacity              | LOS F                              |
|  |   |                  |                          |  | $V_{F}$   |                            | 4391            | Exhibit 25-1  | 4 6780              | No                                 |
| $V_{FO}$                                       |   | Exhibit 25-7     |                          |  | $V_{FO} = V_{F}$  | - V <sub>R</sub>           | 3897            | Exhibit 25-1  | 4 6780              | No                                 |
|  |   |                  |                          |  | V <sub>R</sub>  |                            | 494             | Exhibit 25-3  | 2100                | No                                 |
| Flow Entering                                  | a Merae In                              | fluence A        | rea                      |  | <u> </u>  | terin                      | a Dive          | rge Influen   | ce Area             |                                    |
|  | Actual                                  |                  | Desirable                | Violation?   |   | 1                          | Actual          | Max Desirat   |                     | Violation                          |
| V <sub>R12</sub>                               |   | Exhibit 25-7     |                          |  | V <sub>12</sub>   | 2                          | 2939            | Exhibit 25-14                                       | 4400:All            | No                                 |
| Level of Serv                                  | ice Detern                              |                  | f not F)                 |  |   | Serv                       | vice De         | terminatio  | n (if not l         | <del>-</del> )                     |
| $D_R = 5.475 + 0.0$                            |   | •                |                          |  | _   |                            |                 | .0086 V <sub>12</sub> - 0.                          | _                   | 1                                  |
| D <sub>R</sub> = (pc/mi/                       | • | 12               | A                        |  |   |                            | /mi/ln)         | 12  | Б                   |                                    |
| LOS = (Exhib                                   |   |                  |                          |  | I ''  | **                         | oit 25-4)       |   |                     |                                    |
| Speed Deterr                                   |   |                  |                          |  | Speed D   | •                          |                 | on  |                     |                                    |
| $M_S = $ (Exibit 2                             |   |                  |                          |  | 1 -   |                            |                 |   |                     |                                    |
| · ·  |   |                  |                          |  | $D_s = 0.407$ (Exhibit 25-19)<br>$S_R = 50.3$ mph (Exhibit 25-19) |                            |                 |   |                     |                                    |
|  | ibit 25-19)                             |                  |                          |  |   | -                          |                 |   |                     |                                    |
| $S_0 = mph (Exh)$                              | ibit 25-19)                             |                  |                          | $S_0$ = 59.7 mph (Exhibit 25-19)<br>S = 53.1 mph (Exhibit 25-15) |   |                            |                 |   |                     |                                    |
| S = mph (Exh                                   | ihit 25 111                             |                  |                          |  |   |                            |                 |   |                     |                                    |

|   |                                  | IVAINIL                             | S AND RAM                |   |   | ININO                                 |                 |  |                     |                                    |
|---|----------------------------------|-------------------------------------|--------------------------|---|---|---------------------------------------|-----------------|--|---------------------|------------------------------------|
| General Info  | rmation                          |                                     |                          | Site Infor  |   |                                       |                 |  |                     |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 02/14                            |                                     | J                        | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year | ]<br>]  | Southb<br>Exit 4 S<br>NYSD(<br>2026 F | TC              |  |                     |                                    |
| Project Description   | Exit 4                           |                                     |                          |   |   |                                       |                 |  |                     |                                    |
| Inputs  |                                  |                                     |                          |   |   |                                       |                 |  |                     |                                    |
| Upstream Adj Ramp   |                                  | Terrain: Leve                       |                          |   |   |                                       |                 |  | Downstrea<br>Ramp   | m Adj                              |
| □ Yes □ O   |                                  |                                     |                          |   |   |                                       |                 |  | ✓ Yes               | ✓ On                               |
| ✓ No ☐ O  | ff                               |                                     |                          |   |   |                                       |                 |  | □ No                | ☐ Off                              |
| L <sub>up</sub> = ft  |                                  | S                                   | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4                                   | 0 0 mr                                | nh              |  | L <sub>down</sub> = | 1585 ft                            |
| V <sub>u</sub> = veh/l  |                                  |                                     | Sketch (                 | show lanes, L <sub>A</sub>                                  |   | 0.0 111                               |                 |  | V <sub>D</sub> =    | 1010 veh                           |
| Conversion t  |                                  | der Base (                          | Conditions               |   | ·   | 1                                     |                 | Υ                                      | n e                 |                                    |
| (pc/h)  | V<br>(Veh/hr)                    | PHF                                 | Terrain                  | %Truck  | %Rv   |                                       | f <sub>HV</sub> | f <sub>p</sub>                         | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 3800                             | 0.92                                | Level                    | 2   | 0   | _                                     | .990            | 1.00                                   | 417                 |                                    |
| Ramp  | 770                              | 0.92                                | Level                    | 2   | 0   | 0                                     | .990            | 1.00                                   | 84                  | 5                                  |
| UpStream<br>DownStream  | 1010                             | 0.93                                | Lovol                    | 1 4   | 0   | +                                     | .980            | 1.00                                   | 110                 | 10                                 |
| Downstieam  |                                  | Merge Areas                         | Level                    | 4   | 0   | 0                                     |                 | Diverge Areas                          | 110                 | J6                                 |
| Estimation o  |                                  | mor go 7 ii odo                     |                          |   | Estimati  | ion c                                 |                 | 21101g07110u0                          |                     |                                    |
|   | V <sub>12</sub> = V <sub>F</sub> | (D)                                 |                          |   |   |                                       |                 | = V <sub>R</sub> + (V <sub>F</sub> - V | \D                  |                                    |
| l –   |                                  | (' <sub>FM</sub> )<br>ation 25-2 or | 25. 2\                   |   | _   |                                       |                 | Equation 25-8                          |                     |                                    |
| L <sub>EQ</sub> =<br>P _  |                                  | Equation (E                         |                          |   | L <sub>EQ</sub> =                                     |                                       |                 | .617 using Ed                          |                     | hit 2E 12\                         |
| P <sub>FM</sub> =<br>V <sub>12</sub> =                                | pc/h                             | Equation (L                         | .XIIIDI( 23-3)           |   | P <sub>FD</sub> =<br>V <sub>12</sub> =                |                                       |                 | .017 using Ed<br>897 pc/h              | quation (Exil       | IDIL 20-12)                        |
| V <sub>12</sub> –<br>V <sub>3</sub> or V <sub>av34</sub>              | •                                | (Equation 25                        | -4 or 25-5)              |   | V <sub>12</sub> = V <sub>3</sub> or V <sub>av34</sub> |                                       |                 | 275  pc/h (Equ                         | action OF 15        | or 25 16                           |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                          |                                  |                                     | -4 01 25-5)              |   |   | > 27                                  |                 | Z/3 pc/II (Equ<br>Yes ☑ No             | ialion 25-15        | 01 25-10                           |
| Is $V_3$ or $V_{av34} > 2,7$<br>Is $V_3$ or $V_{av34} > 1.5$          |                                  |                                     |                          |   |   |                                       |                 | Yes Mo                                 |                     |                                    |
| If Yes,V <sub>12a</sub> =   | ·=                               | S I NO<br>(Equation 25              | -8)                      |   | If Yes, $V_{12a} =$                                   |                                       |                 | oc/h (Equation                         | 25-18)              |                                    |
| Capacity Ch   |                                  | (Equation 20                        | -0)                      |   | Capacity  |                                       |                 | on (Equation                           | 123-10)             |                                    |
| Сараспу Сп  | Actual                           | <b>Т</b> с                          | apacity                  | LOS F?  | Capacity  | y Cii                                 | Actual          | Ca                                     | pacity              | LOS F?                             |
|   | Actual                           | <del>† ĭ</del>                      | арасну                   | 1031:   | V <sub>F</sub>  | $\overline{}$                         | 4172            | Exhibit 25-1                           | <u> </u>            | No                                 |
| V   |                                  | Exhibit 25-7                        |                          |   | -   | \/                                    |                 | _                                      |                     | +                                  |
| V <sub>FO</sub>   |                                  | EXHIBIT 23-7                        |                          |   | $V_{FO} = V_{F}$                                      | - v <sub>R</sub>                      | 3327            | Exhibit 25-1                           |                     | No                                 |
| <u></u>   |                                  |                                     |                          |   | V <sub>R</sub>  |                                       | 845             | Exhibit 25-3                           |                     | No                                 |
| Flow Enterin  | 1                                | 1                                   |                          | 1 1/21/20   | Flow En   | - II                                  |                 | rge Influen                            |                     | Nr. 1 . 12                         |
| V   | Actual                           | <del>`</del>                        | Desirable                | Violation?  | \/  |                                       | Actual          | Max Desiral                            |                     | Violation                          |
| V <sub>R12</sub><br>Level of Serv                                     | ioo Doto:::                      | Exhibit 25-7                        | f not []                 |   | V <sub>12</sub>                                       |                                       | 2897            | Exhibit 25-14<br>Eterminatio           | 4400:All            | No No                              |
|   |                                  | •                                   |                          |   | +   |                                       |                 |  |                     | -)                                 |
| $D_R = 5.475 + 0$   |                                  | 0.0078 V <sub>12</sub> -            | 0.00627 L <sub>A</sub>   |   |   |                                       |                 | 0.0086 V <sub>12</sub> - 0.            | .009 L <sub>D</sub> |                                    |
| D <sub>R</sub> = (pc/mi   |                                  |                                     |                          |   |   |                                       | :/mi/ln)        |  |                     |                                    |
| ,   | it 25-4)                         |                                     |                          |   |   | •                                     | bit 25-4)       |  |                     |                                    |
| Speed Deter   |                                  |                                     |                          |   | Speed D   |                                       |                 |  |                     |                                    |
| $M_S = (Exibit 2)$  | 5-19)                            |                                     |                          |   | . "   | •                                     | xhibit 25       | *                                      |                     |                                    |
| S <sub>R</sub> = mph (Exl   | nibit 25-19)                     |                                     |                          |   | S <sub>R</sub> = 49.9 mph (Exhibit 25-19)             |                                       |                 |  |                     |                                    |
| S <sub>0</sub> = mph (Exl   | nibit 25-19)                     |                                     |                          |   | $S_0 = 60$  | ).4 mpł                               | ı (Exhibit      | 25-19)                                 |                     |                                    |
| · ·   | nibit 25-14)                     |                                     |                          |   |   |                                       |                 |  |                     |                                    |

|  | RAI                     | MPS AND F                               | <u>RAMP JUN</u>                       | <u>CTIONS W</u>                            | <u>/ORKSH</u> E                       | ET  |                          |                 |                                       |
|--|-------------------------|---|---------------------------------------|--|---------------------------------------|---|--------------------------|-----------------|---------------------------------------|
| General Info                                   | rmation                 |   |                                       | Site Infor                                 | mation                                |   |                          |                 |                                       |
| Analyst<br>Agency or Company<br>Date Performed | SEB<br>CHA<br>02/14     |   | Ju                                    | reeway/Dir of Tr<br>unction<br>urisdiction |                                       | Southbound I-<br>Exit 4 SB On-F<br>NYSDOT |                          |                 |                                       |
| Analysis Time Perio                            |                         | 4/12                                    |                                       | nalysis Year                               |                                       | 2026 Flyover                              |                          |                 |                                       |
| Project Description                            |                         |   | - 11                                  | narjoio i oai                              | •                                     | 20201130101                               |                          |                 |                                       |
| nputs  |                         |   |                                       |  |                                       |   |                          |                 |                                       |
| Jpstream Adj Ramp                              |                         | Terrain: Level                          |                                       |  |                                       |   |                          | Downstr<br>Ramp | eam Adj                               |
| Yes O  |                         |   |                                       |  |                                       |   |                          | ☐ Yes           | □ On                                  |
| □ No     O                                     | ff                      |   |                                       |  |                                       |   |                          | ✓ No            | ☐ Off                                 |
| - <sub>up</sub> = 1585                         | ft                      |   |                                       |  | L <sub>down</sub> = ft                |   |                          |                 |                                       |
| $v_{\rm u} = 770 \text{ V}$                    | reh/h                   | S <sub>F</sub>                          | $_{F} = 56.0 \text{ mph}$<br>Sketch ( | show lanes, L <sub>A</sub> ,               | $S_{FR} = 40.0 \text{ mph}$           |   |                          |                 | veh/h                                 |
| Conversion                                     | to pc/h Und             | der Base C                              | onditions                             |  |                                       |   |                          | •               |                                       |
| (pc/h)   | V<br>(Veh/hr)           | PHF                                     | Terrain                               | %Truck                                     | %Rv                                   | f <sub>HV</sub>                           | fp                       | v = V/PH        | IF x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 3050                    | 0.92                                    | Level                                 | 2  | 0                                     | 0.990                                     | 1.00                     |                 | 3348                                  |
| Ramp   | 1010                    | 0.93                                    | Level                                 | 4  | 0                                     | 0.980                                     | 1.00                     | 4               | 1108                                  |
| UpStream                                       | 770                     | 0.92                                    | Level                                 | 2  | 0                                     | 0.990                                     | 1.00                     |                 | 845                                   |
| DownStream                                     | <u> </u>                | Merge Areas                             |                                       | <u> </u>                                   | <del> </del>                          | <u> </u>                                  | Diverge Are              | 20              |                                       |
| Estimation o                                   |                         | ivier ge Areas                          |                                       |  | Estimati                              | ion of v <sub>12</sub>                    |                          | as              |                                       |
|  |                         | (D )                                    |                                       |  |                                       | 12  | 1                        |                 |                                       |
|  | $V_{12} = V_{F}$        | • |                                       |  |                                       | V <sub>12</sub>                           | $= V_R + (V_F -$         | $V_R)P_{FD}$    |                                       |
| EQ =   |                         | Equation 2                              |                                       |  | L <sub>EQ</sub> =                     |   | (Equation                | 25-8 or 25      | -9)                                   |
| P <sub>FM</sub> =                              |                         | using Equation                          | on (Exhibit 25-5)                     | )  | P <sub>FD</sub> =                     |   | using Equ                | ation (Exhib    | it 25-12)                             |
| 12 =   | 2057                    | •                                       |                                       |  | V <sub>12</sub> =                     |   | pc/h                     |                 |                                       |
| <sub>3</sub> or V <sub>av34</sub>              | 1291 <sub> </sub><br>5) | pc/h (Equatio                           | n 25-4 or 25-                         |  | $V_3$ or $V_{av34}$                   |   | pc/h (Equati             | on 25-15 or 2   | 5-16)                                 |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,7    | ,                       | s 🗹 No                                  |                                       |  | Is V <sub>3</sub> or V <sub>av3</sub> | $_{34} > 2,700 \text{ pc/h}$              | ? ☐ Yes ☐                | No              |                                       |
| s V <sub>3</sub> or V <sub>av34</sub> > 1.5    |                         |   |                                       |  | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>34</sub> > 1.5 * V <sub>12</sub> /2  | ? ☐ Yes ☐                | No              |                                       |
| Yes,V <sub>12a</sub> =                         | · <del>-</del>          | (Equation 25-                           | 8)                                    |  | If Yes,V <sub>12a</sub> =             |   | pc/h (Equa               | ation 25-18     | )                                     |
| Capacity Ch                                    | •                       | (= 4                                    | -,                                    |  | Canacit                               | y Checks                                  |                          |                 |                                       |
| capacity cir.                                  | Actual                  | Ca                                      | pacity                                | LOS F?                                     | Cupucit                               | Actu                                      |                          | Capacity        | LOS F                                 |
|  |                         |   | , <u></u>                             |  | V <sub>F</sub>                        |   | Exhibit                  |                 |                                       |
| $V_{FO}$                                       | 4456                    | Exhibit 25-7                            |                                       | No   | $V_{FO} = V_{F}$                      | - V <sub>D</sub>                          | Exhibit :                |                 |                                       |
| , FO   | 1100                    | EXHIBIT 20 7                            |                                       | 110  | V <sub>R</sub>                        | R   | Exhibit                  |                 | _                                     |
| Jaw Entarin                                    | a Maraa In              | fluores Ar                              |                                       |  | -                                     | toring Di                                 |                          |                 |                                       |
| Flow Enterin                                   | Actual                  |   | esirable                              | Violation?                                 | FIOW EII                              | Actual                                    | verge Influ              | esirable        | Violation?                            |
| V <sub>R12</sub>                               | 3165                    | Exhibit 25-7                            | 4600:All                              | No   | V <sub>12</sub>                       | Actual                                    | Exhibit 25-1             | _               | violations                            |
| Level of Serv                                  |                         |   |                                       | 140  |                                       | Service                                   | Determina                |                 | ot F1                                 |
|  |                         | 0.0078 V <sub>12</sub> - 0.00           |                                       |  |                                       |   | + 0.0086 V <sub>12</sub> | •               | <i>(1)</i>                            |
| $D_{R} = 3.473$                                | 10                      | 0.0070 V <sub>12</sub> 0.00             | 7027 L <sub>A</sub>                   |  |                                       | c/mi/ln)                                  | 1 0.0000 V <sub>12</sub> | 0.000 LD        |                                       |
| .OS = C (Exhi                                  | ibit 25-4)              |   |                                       |  | LOS = (E                              | xhibit 25-4)                              |                          |                 |                                       |
| Speed Deter                                    | mination                |   |                                       |  | Speed D                               | Determina                                 | tion                     |                 |                                       |
|  | ribit 25-19)            |   |                                       |  | <del>  '</del>                        | xhibit 25-19)                             |                          |                 |                                       |
| -  | (Exhibit 25-19)         |   |                                       |  | 1                                     | ph (Exhibit 25-                           | 19)                      |                 |                                       |
|  | (Exhibit 25-19)         |   |                                       |  |                                       | ph (Exhibit 25-                           |                          |                 |                                       |
| n JJ.Z 111011                                  | (LAHIDIL 20-17)         |   |                                       |  | I "                                   | ,   | ,                        |                 |                                       |
|  | (Exhibit 25-14)         |   |                                       |  | S = mi                                | oh (Exhibit 25-                           | 15)                      |                 |                                       |

|                                  |  | RAMP JUNG         |   |  |                          |                                      |                                   |                                      |
|----------------------------------|--|-------------------|---|--|--------------------------|--------------------------------------|-----------------------------------|--------------------------------------|
| nation                           |  |                   | Site Infor  | mation   |                          |                                      |                                   |                                      |
| PM                               | 1/12   | Ju<br>Ju          | nction<br>risdiction                                  | E  | Exit 5 SB On-F<br>NYSDOT |                                      |                                   |                                      |
| Exit 4                           |  |                   |   |  |                          |                                      |                                   |                                      |
|                                  | h  |                   |   |  |                          |                                      |                                   |                                      |
|                                  | Terrain: Lever   |                   |   |  |                          |                                      | Downstro<br>Ramp                  | eam Adj                              |
|                                  |  |                   |   |  |                          |                                      | ✓ Yes                             | □ On                                 |
|                                  |  |                   |   |  |                          |                                      | I No                              | ✓ Off                                |
|                                  |  | F/ 0 mmh          |   | C 4  | 0.0 mmh                  |                                      | L <sub>down</sub> =               | 4700 ft                              |
|                                  | 3  |                   | show lanes, L <sub>A</sub> ,                          |  | o.o mpn                  |                                      | $V_D =$                           | 770 veh/h                            |
| pc/h Und                         | der Base C   | Conditions        |   |  |                          |                                      |                                   |                                      |
| V<br>(Veh/hr)                    | PHF  | Terrain           | %Truck  | %Rv  | f <sub>HV</sub>          | f <sub>p</sub>                       | v = V/PH                          | F x f <sub>HV</sub> x f <sub>p</sub> |
| 3150                             | 0.92   | Level             | 2   | 0  | 0.990                    | 1.00                                 |                                   | 3458                                 |
| 640                              | 0.87   | Level             | 1   | 0  | 0.995                    | 1.00                                 |                                   | 739                                  |
|                                  |  |                   |   |  |                          |                                      |                                   |                                      |
|                                  |  | Level             | 2   | 0  | 0.990                    | 1.00                                 |                                   | 845                                  |
|                                  | Merge Areas  |                   |   | Cating ati   |                          | Diverge Are                          | as                                |                                      |
| V <sub>12</sub>                  |  |                   |   | Estimati   | on or v <sub>12</sub>    |                                      |                                   |                                      |
| $V_{12} = V_{F}$                 | (P <sub>FM</sub> )   |                   |   |  | V <sub>12</sub>          | = V <sub>D</sub> + (V <sub>E</sub> · | - V <sub>D</sub> )P <sub>ED</sub> |                                      |
| 3397.67                          | (Equation  | 25-2 or 25-3)     |   | L <sub>FO</sub> =  | 12                       |                                      |                                   | .9)                                  |
| 0.614                            | using Equati   | on (Exhibit 25-5) |   |  |                          |                                      |                                   |                                      |
| 2123 g                           | oc/h   |                   |   |  |                          |                                      | ICCIOTT (EXTINO                   | (20 12)                              |
| 1335 p                           | oc/h (Equatio  | n 25-4 or 25-     |   |  |                          | •                                    | ion 25 15 or 2                    | E 14\                                |
| 5)                               |  |                   |   |  | > 2.700 nc/h             |                                      |                                   | J-10)                                |
|                                  |  |                   |   |  | •                        |                                      |                                   |                                      |
| $V_{12}/2  \square  Yes$         | s 🗹 No   |                   |   |  |                          |                                      |                                   |                                      |
| pc/h (                           | (Equation 25   | -8)               |   | II Yes, v <sub>12a</sub> =   |                          | pc/n (Equ                            | ation 25-18                       | )                                    |
| cks                              |  |                   |   | Capacity   | / Checks                 |                                      |                                   |                                      |
| Actual                           | Ca   | pacity            | LOS F?  |  | Actu                     | al                                   | Capacity                          | LOS F                                |
|                                  |  |                   |   | $V_{F}$  |                          | Exhibit                              | 25-14                             |                                      |
| 4197                             | Exhibit 25-7   |                   | No  | $V_{FO} = V_{F}$   | - V <sub>R</sub>         | Exhibit                              | 25-14                             |                                      |
|                                  |  |                   |   |  |                          | Exhibit                              | 25-3                              |                                      |
| Merge In                         | fluence A  | roa               | ļ   | •  | terina Div               |                                      |                                   | <u>_</u>                             |
|                                  | Transfer of the second   |                   | Violation?  | 1 1011 211   |                          |                                      |                                   | Violation?                           |
| 2862                             | Exhibit 25-7   | 4600:All          | No  | V <sub>10</sub>  |                          |                                      | 1                                 |                                      |
|                                  |  |                   |   |  | Service I                |                                      |                                   | ot F)                                |
|                                  |  |                   |   |  |                          |                                      | •                                 | /                                    |
|                                  | 12 3.0   | А                 |   |  | • •                      | *12                                  | : -: <b>-</b> D                   |                                      |
| •                                |  |                   |   |  | •                        |                                      |                                   |                                      |
| •                                |  |                   |   | <u>`</u>   |                          | tion                                 |                                   |                                      |
|                                  |  |                   |   | <del>-</del>   |                          | uOH                                  |                                   |                                      |
| it 25-19)                        |  |                   |   | 3  |                          | 1                                    |                                   |                                      |
|                                  |  |                   |   | S <sub>R</sub> = mp  | h (Exhibit 25-           | 19)                                  |                                   |                                      |
| Exhibit 25-19)                   |  |                   |   |  |                          |                                      |                                   |                                      |
| Exhibit 25-19)<br>Exhibit 25-19) |  |                   |   |  | oh (Exhibit 25-          |                                      |                                   |                                      |
|                                  | CHA 02/14 PM  Exit 4   Description of the properties of the proper | SEB               | SEB CHA Ju 02/14/12 Ju PM An Exit 4    Terrain: Level | SEB CHA Junction 02/14/12 Jurisdiction Analysis Year  Exit 4    Terrain: Level | SEB CHA Junction   1     | SEB                                  | SEB                               | SEB                                  |

|   |   |                            | FREEWA                | Y WEAV   | ING WOR  | KSHEE          | Τ               |  |              |
|---|---|----------------------------|-----------------------|----------|--|----------------|-----------------|--|--------------|
| General   | Informat  | ion                        |                       |          | Site Info  | rmation        |                 |  |              |
| Analyst<br>Agency/Con<br>Date Perforr<br>Analysis Tim | ned   | SEB<br>CHA<br>02/14/<br>PM | 12                    |          | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | Exit 2<br>NYSD  | lorthbound<br>E on to 2W o<br>OOT<br>Flyover | ff           |
| Inputs  |   |                            |                       |          |  |                |                 |  |              |
| Weaving nui<br>Weaving seq<br>Terrain                 | e-flow speed, s<br>mber of lanes,<br>g length, L (ft) | Ň                          | 56<br>4<br>815<br>Lev | el       | Weaving type<br>Volume ratio<br>Weaving ratio              | , VR           |                 | 22<br>36                                     |              |
| Convers   | sions to p  | c/h Unde                   | er Base C             | ondition |  | r              | 1               | 1  |              |
| (pc/h)  | V   | PHF                        | Truck %               | RV %     | E <sub>T</sub>   | E <sub>R</sub> | f <sub>HV</sub> | fp   | V            |
| V <sub>o1</sub>                                       | 4280  | 0.86                       | 2                     | 0        | 1.5  | 1.2            | 0.990           | 1.00   | 5026         |
| $V_{02}$  | 0   | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990           | 1.00   | 0            |
| $V_{w1}$  | 840   | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990           | 1.00   | 922          |
| $V_{w2}$  | 470   | 0.92                       | 2                     | 0        | 1.5  | 1.2            | 0.990           | 1.00   | 515          |
| $V_{_{\mathrm{W}}}$                                   | 1   |                            | •                     | 1437     | V <sub>nw</sub>  |                | •               | •  | 5026         |
| V   | 1   |                            |                       |          |  | l              |                 |  | 6463         |
| Weaving   | g and No  | n-Weavin                   | g Speeds              | 5        |  |                |                 |  |              |
|   |   |                            | Unconstr              | 4        |  |                |                 | trained                                      |              |
| o /Evhibit 24   | ()  | Weaving                    |                       |          | ving (i = nw)  | Weavir         | ng (i = w)      | Non-Wea                                      | ving ( = nw) |
| a (Exhibit 24<br>b (Exhibit 24                        |   | 0.15<br>2.20               |                       |          | .00  |                |                 |  |              |
| c (Exhibit 24   |   | 0.97                       |                       | 1        | .30  |                |                 |  |              |
| d (Exhibit 24   | -6)   | 0.80                       | )                     | 0.       | .75  |                |                 |  |              |
| Weaving intensit                                      | •   | 1.42                       | <u>)</u>              | 0.       | .76  |                |                 |  |              |
| Weaving and no<br>speeds, Si (mi/h                    |   | 34.0                       | 4                     | 41       | .15  |                |                 |  |              |
| Maximum nı  | umber of lanes  |                            |                       |          | 1.28<br>1.40   |                |                 |  |              |
|   |   | (max) uncons               |                       |          |  |                | v (max) constr  | rained operati                               | on           |
|   |   |                            |                       |          | f Service,   | and Cap        | acity           |  |              |
|   |   | S (mi/h)                   |                       | 39.32    |  |                |                 |  |              |
|   | gment density,  | , D (pc/mi/ln)             |                       | 41.09    |  |                |                 |  |              |
| Level of serv   |   | (n a /la)                  |                       | E        |  |                |                 |  |              |
|   | base condition  | <u> </u>                   | # N                   | 6619     |  |                |                 |  |              |
|   |   | ow rate, c (veh            |                       | 6553     |  |                |                 |  |              |
|   | a full-hour vol                                       | ume, c <sub>h</sub> (veh/h | 1)                    | 5728     |  |                |                 |  |              |
| Notes   |   |                            |                       |          |  |                |                 |  |              |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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2/17/2012

b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|   |   |  | FREEWA                | Y WEAV   | ING WOR  | KSHEE          | T               |  |              |
|---|---|--|-----------------------|----------|--|----------------|-----------------|--|--------------|
| General   | Informat  | ion  |                       |          | Site Info  | rmation        |                 |  |              |
| Analyst<br>Agency/Cor<br>Date Perfori<br>Analysis Tin | med   | SEB<br>CHA<br>02/14/<br>PM                       | 12                    |          | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | Exit 2<br>NYSD  | outhbound<br>W on to 2E of<br>OOT<br>Flyover | f            |
| Inputs  |   |  |                       |          | 1  |                |                 |  |              |
| Weaving nu<br>Weaving se<br>Terrain                   | e-flow speed,<br>mber of lanes,<br>g length, L (ft) | , N  | 56<br>4<br>810<br>Lev | el       | Weaving type<br>Volume ratio,<br>Weaving ratio             | , VR           |                 | 23<br>14                                     |              |
| Convers   | sions to p  | c/h Unde   | r Base C              | ondition | 7  |                | 1               | 1  | 1            |
| (pc/h)  | V   | PHF  | Truck %               | RV %     | E <sub>T</sub>   | E <sub>R</sub> | f <sub>HV</sub> | fp   | V            |
| $V_{o1}$  | 3210  | 0.92   | 2                     | 0        | 1.5  | 1.2            | 0.990           | 1.00   | 3524         |
| $V_{o2}$  | 0   | 0.92   | 2                     | 0        | 1.5  | 1.2            | 0.990           | 1.00   | 0            |
| $V_{w1}$  | 840   | 0.92   | 2                     | 0        | 1.5  | 1.2            | 0.990           | 1.00   | 922          |
| $V_{w2}$  | 140   | 0.92   | 2                     | 0        | 1.5  | 1.2            | 0.990           | 1.00   | 153          |
| V <sub>w</sub>  | 1   |  |                       | 1075     | V <sub>nw</sub>  |                | •               |  | 3524         |
| V V   | 1   |  |                       |          |  | l              |                 |  | 4599         |
| Weavin  | g and No  | n-Weavin   | g Speeds              | <u> </u> |  |                |                 |  |              |
|   |   |  | Unconstr              |          |  |                |                 | trained                                      |              |
| - /E. hibit 0   | 1.7   | Weaving  | <u> </u>              |          | ving (i = nw)  | Weavir         | ng (i = w)      | Non-Wea                                      | ving ( = nw) |
| a (Exhibit 24<br>b (Exhibit 24                        |   | 0.15<br>2.20                                     |                       | !        | 0035   |                |                 |  |              |
| c (Exhibit 24   |   | 0.97   |                       |          | .30  |                |                 |  |              |
| d (Exhibit 24   |   | 0.80   |                       | 1        | .75  |                |                 |  |              |
| Weaving intensi                                       |   | 1.04   |                       | 0.       | .51  |                |                 |  |              |
| Weaving and no<br>speeds, Si (mi/h                    |   | 37.5   | )                     | 45       | .49  |                |                 |  |              |
| Number of I<br>Maximum n                              | anes required<br>umber of lanes                     | for unconstrair<br>s, Nw (max)<br>ı(max) unconst |                       |          | 1.26<br>1.40   | if Nw > Nv     | v (max) consti  | rained operati                               | on           |
|   |   | <u> </u>   |                       |          | f Service,   |                | , ,             | '  |              |
| Weaving se  | gment speed,  | S (mi/h)   |                       | 43.33    |  | <u> </u>       |                 |  |              |
|   | gment density                                       |  |                       | 26.53    |  |                |                 |  |              |
| Level of ser  | vice, LOS   |  |                       | С        |  |                |                 |  |              |
| Capacity of   | base conditior                                      | n, c <sub>b</sub> (pc/h)                         |                       | 6549     |  |                |                 |  |              |
| Capacity as   | a 15-minute fl                                      | ow rate, c (veh                                  | /h)                   | 6484     |  |                |                 |  |              |
| Capacity as   | a full-hour vol                                     | ume, c <sub>h</sub> (veh/h                       | )                     | 5965     |  |                |                 |  |              |
| Notes   |   |  |                       | -        |  |                |                 |  |              |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

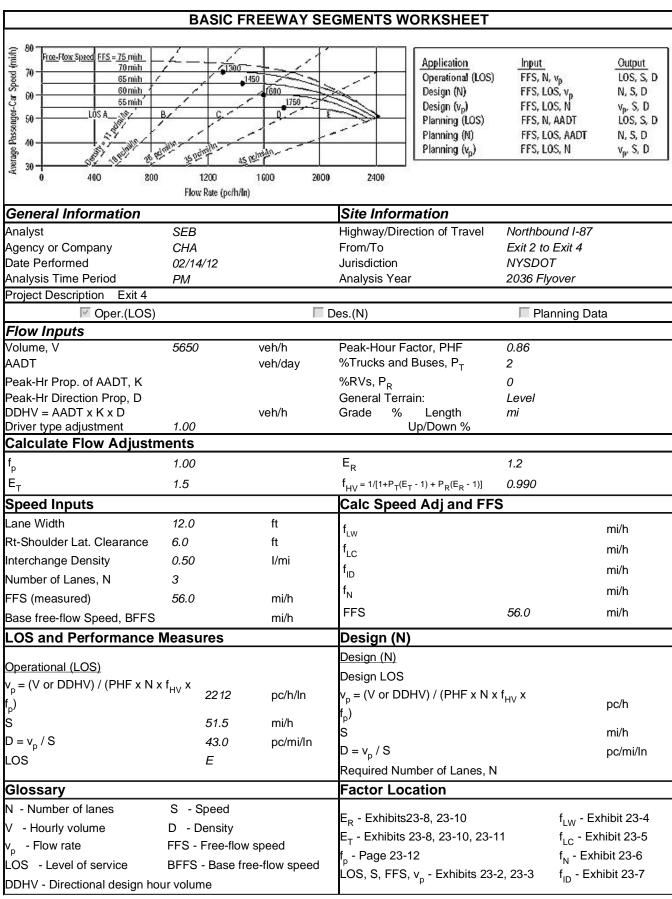
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

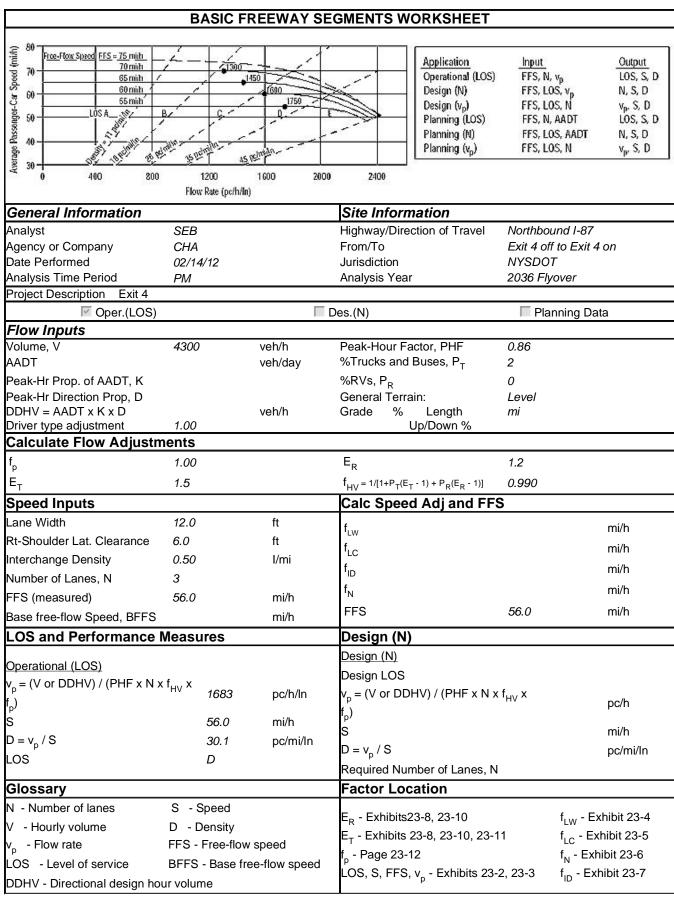
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such



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|  | BASIC F   | REEWAY SE        | GMENTS W  | ORKSHEET   |  |  |
|--|---|------------------|---|--|--|--|
| S0   Free-Flow Spzed FFS = 75 mith   70 mith   70 mith   65 mith | B C C   | 1500 2000        | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N, V <sub>p</sub><br>FFS, LOS, V <sub>f</sub><br>FFS, LOS, N<br>FFS, N, AAD<br>FFS, LOS, A | v <sub>p</sub> , S, D<br>T LOS, S, D<br>ADT N, S, D                    |
| S. 2017 B0949  | Flow Rate (pc/h/lin                                   | )                | C 0-43.54   |  |  |  |
| General Information  |   |                  | Site Infori   |  |  |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period   | SEB<br>CHA<br>02/14/12<br>PM                          |                  | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea                             | ection of Travel<br>ar   | Southbound<br>Exit 4 to Exit<br>NYSDOT<br>2036 Flyove  | 2  |
| Project Description Exit 4   |   |                  |   |  |  | _  |
| Oper.(LOS)   |   |                  | Des.(N)   |  | Plannin  | g Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 4150  | veh/h<br>veh/day | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terr                  | d Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level  |  |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00  | veh/h            | Grade %   | Length<br>Up/Down %  | mi   |  |
| Calculate Flow Adjustr   |   |                  |   |  |  |  |
| f <sub>p</sub>   | 1.00  |                  | E <sub>R</sub>  |  | 1.2  |  |
| E <sub>T</sub>   | 1.5   |                  |   | E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990  |  |
| Speed Inputs   | 10.0  | •                | Calc Spee   | ed Adj and FFS   | 5  |  |
| Lane Width   | 12.0  | ft               | $f_LW$  |  |  | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0   | ft<br>./m:       | $f_LC$  |  |  | mi/h   |
| Interchange Density<br>Number of Lanes, N  | 0.50<br>3   | I/mi             | $f_ID$  |  |  | mi/h   |
| FFS (measured)   | 56.0  | mi/h             | $f_N$   |  |  | mi/h   |
| Base free-flow Speed, BFFS   | 30.0  | mi/h             | FFS   |  | 56.0   | mi/h   |
| LOS and Performance  | Measures  | 1111/11          | Design (N   | <u>,                                      </u>   |  |  |
| Operational (LOS) $v_{p} = (V \text{ or DDHV}) / (PHF \times N)$ $f_{p}$ S   |   | pc/h/ln<br>mi/h  | <u>Design (N)</u><br>Design LOS   | •  | f <sub>HV</sub> x  | pc/h   |
| D = v <sub>p</sub> / S<br>LOS  | 27.1<br>D   | pc/mi/ln         | S<br>D = v <sub>p</sub> / S<br>Required Nu  | ımber of Lanes, N  |  | mi/h<br>pc/mi/ln   |
| Glossary   |   |                  | Factor Lo   |  |  |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fro |                  | E <sub>R</sub> - Exhibits<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1 f <sub>LC</sub>  | y - Exhibit 23-4<br>- Exhibit 23-5<br>- Exhibit 23-6<br>- Exhibit 23-7 |
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|  | BASIC F  | REEWAY SE                               | GMENTS W   | ORKSHEET   |  |   |
|--|--|---|--|--|--|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 70 mith 65 mith 55 mith 55 mith 40 mith 70 mi | B C  | 450<br>(600<br>1750<br>0<br>1600<br>200 | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO:<br>FFS, LO:<br>FFS, LO:<br>FFS, LO: | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D            |
| General Information  | Flow Rate (pc/h/lin                                    | )                                       | Site Inform  | mation   |  |   |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period   | SEB<br>CHA<br>02/14/12<br>PM                           |   |  | ection of Travel   | Northbou<br>Exit 4 off<br>NYSDOT<br>2036 Flyc                    | to Exit 4 off   |
| Project Description Exit 4  Oper.(LOS)   |  | П                                       | Des.(N)  |  | ∏ Plan   | ining Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 4400   | veh/h<br>veh/day                        | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra | Buses, P <sub>T</sub>  | 0.86<br>2<br>0<br>Level  |   |
| DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjustr  | 1.00<br>nents  | veh/h                                   | Grade %  | Length<br>Up/Down %  | mi   |   |
| $f_p$  | 1.00   |   | E <sub>R</sub>   |  | 1.2  |   |
| $E_T$  | 1.5  |   | $f_{HV} = 1/[1+P_T(E_T)]$  | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |   |
| Speed Inputs   |  |   | Calc Spee  | d Adj and FFS  | 6  |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N   | 12.0<br>6.0<br>0.50<br>3                               | ft<br>ft<br>I/mi                        | $f_{LW}$ $f_{LC}$ $f_{ID}$   |  |  | mi/h<br>mi/h<br>mi/h  |
| FFS (measured)   | 56.0   | mi/h                                    | f <sub>N</sub>   |  |  | mi/h  |
| Base free-flow Speed, BFFS   |  | mi/h                                    | FFS  |  | 56.0   | mi/h  |
| LOS and Performance  Operational (LOS)   | Measures   |   | Design (N)  Design (N)   |  |  |   |
| $v_p = (V \text{ or DDHV}) / (PHF x N)$ $f_p$  | x f <sub>HV</sub> x 1722                               | pc/h/ln                                 | Design LOS<br>$v_p = (V \text{ or DD} f_p)$                          | PHV) / (PHF x N x  | f <sub>HV</sub> x  | pc/h  |
| S<br>D=v <sub>p</sub> /S<br>LOS  | 56.0<br>30.8<br>D                                      | mi/h<br>pc/mi/In                        | S<br>D = v <sub>p</sub> / S  | mber of Lanes, N   |  | mi/h<br>pc/mi/ln  |
| Glossary   |  |   | Factor Loc   | cation   |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service  | S - Speed D - Density FFS - Free-flow BFFS - Base from |   | f <sub>p</sub> - Page 23-  | 23-8, 23-10, 23-1  |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_{N}$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design ho   |  |   |  | M Version 5.3  |  | nerated: 2/17/2012 1:38   |

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|  | BASIC F  | REEWAY SE                 | GMENTS W  | ORKSHEET   |  |   |
|--|--|---------------------------|---|--|--|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 65 mith 60 mith 55 mith 50 LOS A 6 | B C  | 1500 2000                 | 2400  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO:<br>FFS, LO:<br>FFS, LO:<br>FFS, LO: | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D          |
| General Information  | Flow Rate (pc/h/lin                                    | )                         | Site Inform   | nation   |  |   |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period   | SEB<br>CHA<br>02/14/12<br>PM                           |                           |   | ection of Travel   | Southbou<br>Exit 4 off<br>NYSDOT<br>2036 Flyo                    | to Exit 4 on  |
| Project Description Exit 4  Oper.(LOS)   |  | П                         | Des.(N)   |  | ☐ Plan   | ining Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D  | 3050   | veh/h<br>veh/day<br>veh/h | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade % | Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level<br>mi                                    |   |
| Driver type adjustment  Calculate Flow Adjustr   | 1.00<br>nents  | Verifii                   |   | Up/Down %  |  |   |
| f <sub>p</sub>   | 1.00   |                           | E <sub>R</sub>  |  | 1.2  |   |
| E <sub>T</sub>   | 1.5  |                           |   | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |   |
| Speed Inputs   |  |                           |   | d Adj and FFS  | <del></del>  |   |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>3<br>56.0                       | ft<br>ft<br>I/mi<br>mi/h  | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub>                                 |  |  | mi/h<br>mi/h<br>mi/h<br>mi/h  |
| Base free-flow Speed, BFFS   | 33.3   | mi/h                      | FFS   |  | 56.0   | mi/h  |
| LOS and Performance  | Measures   |                           | Design (N)  | )  |  |   |
| Operational (LOS) v <sub>p</sub> = (V or DDHV) / (PHF x N : f <sub>p</sub> ) S   |  | pc/h/ln<br>mi/h           | $\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DD}$ $f_p)$   | OHV) / (PHF x N x  | f <sub>HV</sub> x  | pc/h  |
| D = v <sub>p</sub> / S<br>LOS  | 19.9<br>C  | pc/mi/ln                  | S<br>D = v <sub>p</sub> / S<br>Required Nu                                      | mber of Lanes, N   |  | mi/h<br>pc/mi/In  |
| Glossary   |  |                           | Factor Loc  | cation   |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service  | S - Speed D - Density FFS - Free-flow BFFS - Base from |                           | f <sub>p</sub> - Page 23-   | 23-8, 23-10, 23-1  |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_N$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design ho   |  |                           |   | M Version 5.3  |  | nerated: 2/17/2012 1:38   |

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|  | BASIC F   | REEWAY SE                               | EGMENTS W  | ORKSHEET   |   |   |
|--|---|---|--|--|---|---|
| 80 Free-Flow Speed FFS = 75 mith 70 mith 70 mith 65 mith 55 mith 55 mith 100 A | B C C   | 450<br>(600<br>1750<br>0<br>1600<br>200 | 0 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input FFS, N, vp FFS, LOS, FFS, N, Ai FFS, LOS, FFS, LOS, | v <sub>p</sub> N, S, D<br>N v <sub>p</sub> , S, D<br>ADT LOS, S, D<br>AADT N, S, D  |
| General Information  | Flow Rate (pc/h/lin                                   | L <sub>2</sub>                          | Site Inforn  | nation   |   |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/14/12<br>PM                          |   |  | ction of Travel  | Northboun<br>Exit 4 to E<br>NYSDOT<br>2036 Flyon          | xit 5   |
| ✓ Oper.(LOS)   |   | П                                       | Des.(N)  |  | ☐ Plann   | ing Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D  | 5950  | veh/h<br>veh/day<br>veh/h               | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra<br>Grade %      | Buses, P <sub>T</sub> ain: Length  | 0.86<br>2<br>0<br>Level<br>mi                             |   |
| Driver type adjustment   | 1.00  |   |  | Up/Down %  |   |   |
| Calculate Flow Adjustr   |   |   |  |  | 1.2   |   |
| f <sub>p</sub><br>E <sub>⊤</sub>   | 1.00<br>1.5   |   | E <sub>R</sub>   | 1) . D /E 1)   | 0.990   |   |
| Speed Inputs   | 1.5   |   |  | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]<br><b>d Adj and FFS</b>   |   |   |
| Lane Width   | 12.0  | ft                                      |  | u Auj anu FFS  | <u> </u>  |   |
| Rt-Shoulder Lat. Clearance<br>Interchange Density  | 6.0<br>0.50   | ft<br>I/mi                              | f <sub>LW</sub><br>f <sub>LC</sub>   |  |   | mi/h<br>mi/h<br>mi/h  |
| Number of Lanes, N   | 4   |   | f  |  |   | mi/h  |
| FFS (measured)   | 56.0  | mi/h                                    | FFS  |  | 56.0  | mi/h  |
| Base free-flow Speed, BFFS   |   | mi/h                                    |  |  |   | 1111/11   |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ )  S $D = v_p / S$ LOS   |   | pc/h/ln<br>mi/h<br>pc/mi/ln             | $f_p$ ) $S$ $D = v_p / S$  | PHV) / (PHF x N x  | f <sub>HV</sub> x   | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |   |   | Factor Loc   |  |   |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fro |   | E <sub>R</sub> - Exhibits2<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23- | 23-8, 23-10<br>23-8, 23-10, 23-1   | 1 f<br>f  | <sub>LW</sub> - Exhibit 23-4<br><sub>LC</sub> - Exhibit 23-5<br><sub>N</sub> - Exhibit 23-6<br><sub>ID</sub> - Exhibit 23-7 |
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|   | BASIC F               | REEWAY SE                                     | EGMENTS W                  | ORKSHEET   |   |   |
|---|-----------------------|---|----------------------------|--|---|---|
| 80 Free-Flow Spzed FFS = 75 mith 70 mith 70 mith 65 mith 65 mith 55 mith 55 mith 70 LOS A 10 | B C C                 | 150 (500 1750 1750 1750 1750 1750 1750 1750 1 | 2400                       | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (M) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v FFS, N, AA FFS, LOS, f FFS, LOS, f | v <sub>p</sub> , S, D<br>DT LOS, S, D<br>NADT N, S, D |
| General Information   | Flow Rate (pc/h/lin   | )   | Site Inform                | mation   |   |   |
| Analyst   | SEB                   |   |                            | ection of Travel   | Southbound  | H I-87  |
| Agency or Company   | CHA                   |   | From/To                    | otion of Travel  | Exit 5 to Ex  |   |
| Date Performed  | 02/14/12              |   | Jurisdiction               |  | NYSDOT  |   |
| Analysis Time Period  | PM                    |   | Analysis Yea               | r  | 2036 Flyove   | er  |
| Project Description Exit 4  |                       |   |                            |  |   |   |
| ✓ Oper.(LOS)  |                       |   | Des.(N)                    |  | □ Planni  | ng Data   |
| Flow Inputs   |                       |   |                            |  |   |   |
| Volume, V   | 3900                  | veh/h   | Peak-Hour Fa               |  | 0.92  |   |
| AADT  |                       | veh/day                                       | %Trucks and                | Buses, P <sub>T</sub>  | 2   |   |
| Peak-Hr Prop. of AADT, K  |                       |   | %RVs, P <sub>R</sub>       |  | 0   |   |
| Peak-Hr Direction Prop, D<br>DDHV = AADT x K x D  |                       | veh/h   | General Terra              |  | Level   |   |
| Driver type adjustment  | 1.00                  | ven/n   | Grade %                    | Length<br>Up/Down %  | mi  |   |
| Calculate Flow Adjusti  |                       |   |                            | <u> </u>   |   |   |
| f <sub>p</sub>  | 1.00                  |   | E <sub>R</sub>             |  | 1.2   |   |
| E <sub>T</sub>  | 1.5                   |   |                            | 1) . D /E 1)1  | 0.990   |   |
|   | 1.5                   |   |                            | $\frac{1}{1} - 1 + P_R(E_R - 1)$   |   |   |
| Speed Inputs  | 10.0                  |   | Caic Spee                  | d Adj and FFS  | )   |   |
| Lane Width  | 12.0                  | ft  | ${\sf f}_{\sf LW}$         |  |   | mi/h  |
| Rt-Shoulder Lat. Clearance  | 6.0                   | ft  | $f_LC$                     |  |   | mi/h  |
| Interchange Density   | 0.50                  | l/mi  | f <sub>ID</sub>            |  |   | mi/h  |
| Number of Lanes, N  | 3                     |   | f                          |  |   | mi/h  |
| FFS (measured)  | 56.0                  | mi/h  | 'N                         |  | <b>50.0</b>   |   |
| Base free-flow Speed, BFFS  |                       | mi/h  | FFS                        |  | 56.0  | mi/h  |
| LOS and Performance   | Measures              |   | Design (N                  | )  |   |   |
| Operational (LOS)   |                       |   | Design (N)                 |  |   |   |
| Operational (LOS)   | v f v                 |   | Design LOS                 |  |   |   |
| $v_p = (V \text{ or DDHV}) / (PHF \times N)$  | 1427 1427             | pc/h/ln                                       | $v_p = (V \text{ or } DD)$ | OHV) / (PHF x N x  | f <sub>HV</sub> x   | /I-   |
| f <sub>p</sub> )  | <b></b>               | . /-  | f <sub>p</sub> )           |  |   | pc/h  |
| S   | 56.0                  | mi/h  | Ś                          |  |   | mi/h  |
| $D = v_p / S$   | 25.5                  | pc/mi/ln                                      | $D = v_p / S$              |  |   | pc/mi/ln  |
| LOS   | С                     |   | F                          | mber of Lanes, N   |   | 1   |
| <br>Glossary  |                       |   | Factor Loc                 |  |   |   |
| N - Number of lanes   | S - Speed             |   | 1 40101 201                | <u> </u>   |   |   |
| V - Hourly volume   | D - Density           |   | E <sub>R</sub> - Exhibits: | 23-8, 23-10  | $f_L$   | <sub>W</sub> - Exhibit 23-4                           |
| I   | •                     | , sneed                                       | $E_T$ - Exhibits           | 23-8, 23-10, 23-1  | 1 f <sub>L</sub>  | <sub>C</sub> - Exhibit 23-5                           |
| v <sub>p</sub> - Flow rate  | FFS - Free-flow       |   | f <sub>p</sub> - Page 23-  | 12   | _   | - Exhibit 23-6  |
| LOS - Level of service  | BFFS - Base fr        | ee-flow speed                                 | P                          | , v <sub>p</sub> - Exhibits 23-2   |   | - Exhibit 23-7  |
| DDHV - Directional design ho  | our volume            |   |                            | <u>'</u>   | "   | -<br>   |
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|  | BASIC FF  | REEWAY SE                | GMENTS W   | ORKSHEET   |   |  |
|--|---|--------------------------|--|--|---|--|
| Free-Flow Speed FFS = 75 mith   70 | B C C   | 50 (600 1750 E           | 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AADT FFS, LOS, N | Output<br>LOS, S, D<br>N, S, D<br>V <sub>p</sub> , S, D<br>LOS, S, D<br>N, S, D<br>V <sub>p</sub> , S, D |
| General Information  | Flow Rate (pc/h/lin)  | 5<br>3                   | Site Inform  | mation   |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | CLD<br>CHA<br>07/30/13<br>PM                                      |                          |  | ection of Travel   | Northbound I-8<br>Exit 5 to Exit 6<br>NYSDOT<br>2036 Flyover  | 7  |
| ✓ Oper.(LOS)   |   |                          | Des.(N)  |  | Planning [  | Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 6200  | veh/h<br>veh/day         | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra | Buses, P <sub>T</sub>  | 0.86<br>2<br>0<br>Level   |  |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00  | veh/h                    | Grade %  | Length<br>Up/Down %  | mi  |  |
| Calculate Flow Adjustr   |   |                          |  |  | 1.0   |  |
| f <sub>p</sub>   | 1.00<br>1.5   |                          | E <sub>R</sub>   | 4) . D /E 4)1  | 1.2<br>0.990  |  |
| E <sub>⊤</sub><br>Speed Inputs   | 1.5   |                          |  | <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]<br><b>d Adj and FFS</b>   |   |  |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>4<br>56.0                                  | ft<br>ft<br>I/mi<br>mi/h | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub>       | a Aaj ana 11 o   |   | mi/h<br>mi/h<br>mi/h<br>mi/h   |
| Base free-flow Speed, BFFS   | 56.0  | mi/h                     | FFS  |  | 56.0  | mi/h   |
| LOS and Performance  | Measures  | 1111/11                  | Design (N)   | 1  |   |  |
| Operational (LOS)<br>$V_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ S  |   | pc/h/ln<br>mi/h          | <u>Design (N)</u><br>Design LOS                                      | )HV) / (PHF x N x t  | f <sub>HV</sub> x   | pc/h   |
| D = v <sub>p</sub> / S<br>LOS  | 32.5<br>D   | pc/mi/ln                 | S<br>D = v <sub>p</sub> / S<br>Required Nu                           | mber of Lanes, N   |   | mi/h<br>pc/mi/ln   |
| Glossary   |   |                          | Factor Loc   | cation   |   |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base freedour volume | -                        | f <sub>p</sub> - Page 23-  | 23-8, 23-10, 23-1  | 1 f <sub>LC</sub> - I<br>f <sub>N</sub> - E   | Exhibit 23-4<br>Exhibit 23-5<br>xhibit 23-6<br>Exhibit 23-7  |
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|  | BASIC F                                     | REEWAY SI                   | EGMENTS V  | VORKSHEET  |   |  |
|--|---|-----------------------------|--|--|---|--|
| So   | By C.                                       | 150<br>(600<br>1750<br>0    |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AADT FFS, LOS, N | Output  LOS, S, D  N, S, D  v <sub>p</sub> , S, D  LOS, S, D  N, S, D  v <sub>p</sub> , S, D |
| 0 400 800  | ) 1200<br>Flow Rate (pc/h/lin               | 1600 200<br>)               | 0 2400   |  |   |  |
| General Information  |   |                             | Site Infor   | mation   |   |  |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | CLD<br>CHA<br>07/30/13<br>PM                |                             | Highway/Dir<br>From/To<br>Jurisdiction<br>Analysis Yea               | ection of Travel   | Southbound I-8<br>Exit 6 to Exit 5<br>NYSDOT<br>2036 Flyover  | 37   |
| ✓ Oper.(LOS)   |   |                             | Des.(N)  |  | ☐ Planning  | Data   |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K  | 3800  | veh/h<br>veh/day            | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub>                   | d Buses, P <sub>T</sub>  | 0.92<br>2<br>0  |  |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment Calculate Flow Adjustr  | 1.00<br>ments                               | veh/h                       | General Ter<br>Grade %   |  | Level<br>mi   |  |
| f <sub>p</sub>   | 1.00  |                             | E <sub>R</sub>   |  | 1.2   |  |
| E <sub>T</sub>   | 1.5   |                             |  | E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990   |  |
| Speed Inputs   |   |                             |  | ed Adj and FFS   |   |  |
| Lane Width Rt-Shoulder Lat. Clearance Interchange Density Number of Lanes, N FFS (measured)  | 12.0<br>6.0<br>0.50<br>4<br>56.0            | ft<br>ft<br>I/mi<br>mi/h    | f <sub>LW</sub> f <sub>LC</sub> f <sub>ID</sub> f <sub>N</sub> FFS   |  | 56.0  | mi/h<br>mi/h<br>mi/h<br>mi/h<br>mi/h   |
| Base free-flow Speed, BFFS   |   | mi/h                        |  |  | 30.0  | 1111/11  |
| LOS and Performance  Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p$ )  S $D = v_p / S$                       | x f <sub>HV</sub> x<br>1043<br>56.0<br>18.6 | pc/h/ln<br>mi/h<br>pc/mi/ln | Design (N) Design LOS $v_p = (V \text{ or DI} f_p)$ S $D = v_p / S$  | -  | f <sub>HV</sub> x   | pc/h<br>mi/h<br>pc/mi/ln   |
| LOS  | С   |                             |  | umber of Lanes, N  |   |  |
| Glossary  N - Number of lanes  V - Hourly volume  v <sub>p</sub> - Flow rate  LOS - Level of service  DDHV - Directional design ho |   |                             | E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23<br>LOS, S, FFS | s23-8, 23-10<br>s 23-8, 23-10, 23-11<br>-12<br>S, v <sub>p</sub> - Exhibits 23-2   | 1 f <sub>LC</sub> - f <sub>N</sub> - E<br>2, 23-3 f <sub>ID</sub> - I                                     | Exhibit 23-4<br>Exhibit 23-5<br>Exhibit 23-6<br>Exhibit 23-7                                 |
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|   |                              | MPS AND        | RAMP JUNG                              |  |  | EET  |                      |                          |                                 |                                    |  |
|---|------------------------------|----------------|--|--|--|--|----------------------|--------------------------|---------------------------------|------------------------------------|--|
| General Info  | rmation                      |                |  | Site Infor   | mation   |  |                      |                          |                                 |                                    |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | 02/14                        |                | Jui<br>Jui                             | eeway/Dir of Tr<br>nction<br>risdiction<br>alysis Year |  |  |                      | р                        |                                 |                                    |  |
| Project Description   |                              |                |  |  |  |  | <i>y</i>             |                          |                                 |                                    |  |
| nputs   |                              |                |  |  |  |  |                      |                          |                                 |                                    |  |
| Jpstream Adj Ramp   | )                            | Terrain: Level |  |  |  |  |                      |                          | Downstrea<br>Ramp               | am Adj                             |  |
| Yes O   |                              |                |  |  |  |  |                      |                          | ☐ Yes                           | □ On                               |  |
| □ No    □ O   | ff                           |                |  |  |  |  |                      |                          | ™ No                            | Off                                |  |
| - <sub>up</sub> = 1100  | ft                           |                |  |  |  |  |                      |                          | L <sub>down</sub> =             | ft                                 |  |
| / <sub>u</sub> = 880 v  | /eh/h                        | S              | <sub>FF</sub> = 56.0 mph<br>Sketch ( s | show lanes, L <sub>A</sub> ,                           | $S_{FR} = 4$<br>$L_{D'}V_{R'}V_{f}$                                | 0.0 mpl  | h                    |                          | V <sub>D</sub> =                | veh/h                              |  |
| Conversion  | to pc/h Und                  | der Base C     | Conditions                             |  |  |  |                      |                          |                                 |                                    |  |
| (pc/h)  | V<br>(Veh/hr)                | PHF            | Terrain                                | %Truck   | %Rv  | f  | HV                   | $f_p$                    | v = V/PHF                       | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway   | 4750                         | 0.86           | Level                                  | 2  | 0  | 0.9  | 90                   | 1.00                     | 5                               | 578                                |  |
| Ramp  | 880                          | 0.92           | Level                                  | 2  | 0  | 0.9  | 90                   | 1.00                     |                                 | 966                                |  |
| UpStream  | 880                          | 0.92           | Level                                  | 2  | 0  | 0.9  | 90                   | 1.00                     | ,                               | 966                                |  |
| DownStream  | <u> </u>                     | Merge Areas    |  |  |  |  |                      | Diverse Areas            |                                 |                                    |  |
| Estimation o  |                              |                | Estimati                               | ion o  |  | Diverge Areas                                    | •                    |                          |                                 |                                    |  |
|   |                              | (D )           |  |  |  |  |                      |                          |                                 |                                    |  |
|   | $V_{12} = V_F$               |                | 25.0 05.0)                             |  |  |  | V <sub>12</sub> =    | $V_R + (V_F - V_F)$      | ′ <sub>R</sub> )P <sub>FD</sub> |                                    |  |
| EQ =  |                              | (Equation 2    |  |  | L <sub>EQ</sub> =  |  |                      | (Equation 2              | 5-8 or 25-9                     | )                                  |  |
| )<br>FM =   |                              |                | on (Exhibit 25-5)                      |  | P <sub>FD</sub> =  |  |                      | using Equat              | ion (Exhibit                    | 25-12)                             |  |
| 1 <sub>12</sub> =   | 3224                         |                | 05.4.05                                |  | V <sub>12</sub> =  |  |                      | pc/h                     |                                 |                                    |  |
| <sub>3</sub> or V <sub>av34</sub>                                     | 2354  <br><b>5</b> )         | oc/n (Equatio  | n 25-4 or 25-                          |  | V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 25-15 or 25-16) |  |                      |                          |                                 |                                    |  |
| s V <sub>3</sub> or V <sub>av34</sub> > 2,7                           | ,                            | s 🗹 No         |  |  | Is V <sub>3</sub> or V <sub>av3</sub>                              | <sub>34</sub> > 2,70                             | 00 pc/h?             | ☐ Yes ☐ N                | 0                               |                                    |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                          |                              |                |  |  | Is V <sub>3</sub> or V <sub>av3</sub>                              | <sub>34</sub> > 1.5                              | * V <sub>12</sub> /2 | ☐ Yes ☐ N                | 0                               |                                    |  |
| Yes,V <sub>12a</sub> =  | · <del>-</del>               | (Equation 25   | -8)                                    |  | If Yes,V <sub>12a</sub> =  | :  |                      | pc/h (Equati             | on 25-18)                       |                                    |  |
| Capacity Ch   |                              | <u> </u>       | ,                                      |  | Capacit  | v Che  | ecks                 |                          |                                 |                                    |  |
| o para say  | Actual                       | Ca             | pacity                                 | LOS F?   | 10   |  | Actual               | С                        | apacity                         | LOS F                              |  |
|   |                              |                |  |  | V <sub>F</sub>   |  |                      | Exhibit 25               |                                 |                                    |  |
| $V_{FO}$  | 6544                         | Exhibit 25-7   |  | No   | $V_{FO} = V_{F}$   | - V <sub>D</sub>                                 |                      | Exhibit 25               | -14                             |                                    |  |
| FO  |                              |                |  |  | V <sub>R</sub>   |  |                      | Exhibit 25               | _                               | +                                  |  |
| Flow Enterin  | na Merae In                  | fluence A      | ro2                                    | <u> </u>   | •  | torin  | a Dive               | erge Influe              |                                 | <u></u>                            |  |
| TOW LINEITH   | Actual                       |                | Desirable                              | Violation?   | i iow En   |  | ctual                | Max Des                  |                                 | Violation                          |  |
| V <sub>R12</sub>  | 4190                         | Exhibit 25-7   | 4600:All                               | No   | V <sub>12</sub>  | <del>1                                    </del> |                      | Exhibit 25-14            |                                 |                                    |  |
| Level of Serv   | ı∟<br>≀ice Detern            |                | f not F)                               |  |  | Serv   | rice D               | eterminati               | on (if no                       | <i>t F</i> )                       |  |
|   | + 0.00734 v <sub>R</sub> + 0 |                |  |  |  |  |                      | 0.0086 V <sub>12</sub> - | <u> </u>                        | <del>,</del>                       |  |
| 10  | c/mi/ln)                     | 12             | А                                      |  |  | c/mi/lr  |                      | 12                       | ט                               |                                    |  |
|   | ibit 25-4)                   |                |  |  |  | xhibit   | ,                    |                          |                                 |                                    |  |
| Speed Deter   |                              |                |  |  | Speed D  |  |                      | on                       |                                 |                                    |  |
|   |                              |                |  |  | <del>                                     </del>                   | xhibit 2   |                      | <del></del>              |                                 |                                    |  |
| ,   | (ibit 25-19)                 |                |  |  |  |  | ibit 25-19           | )                        |                                 |                                    |  |
|   | (Exhibit 25-19)              |                |  |  |  |  | ibit 25-19           |                          |                                 |                                    |  |
| S <sub>0</sub> = 49.1 mph   | (Exhibit 25-19)              |                |  |  | l °  |  |                      | •                        |                                 |                                    |  |
|   | (Exhibit 25-14)              |                |  |  | IS = mi  | nh /Evb  | ibit 25-15           | 1                        |                                 |                                    |  |

|   | · · ·                      | IXAIIII                         | S AND RAM                   |  |                                    |                    |                 |  |                      |                                    |
|---|----------------------------|---------------------------------|-----------------------------|--|------------------------------------|--------------------|-----------------|--|----------------------|------------------------------------|
| General In  |                            |                                 |                             | Site Infor                                 |                                    |                    |                 |  |                      |                                    |
| Analyst Agency or Comp Date Performed Analysis Timo P | 02/                        | A<br>14/12                      | J                           | reeway/Dir of Tr<br>unction<br>urisdiction |                                    | Exit 4<br>NYSD     |                 | SR                                     |                      |                                    |
| Analysis Time Po<br>Project Descripti                 |                            |                                 | A                           | nalysis Year                               |                                    | 2036 F             | lyover          |  |                      |                                    |
| Inputs  | UII EXIL4                  |                                 |                             |  |                                    |                    |                 |  |                      |                                    |
| •   |                            | Terrain: Leve                   | <u> </u>                    |  |                                    |                    |                 |  | Daywastras           | na A ali                           |
| Upstream Adj Ra                                       | imp<br>On                  | 10.114 2010                     | •                           |  |                                    |                    |                 |  | Downstrea<br>Ramp    | -                                  |
|   |                            |                                 |                             |  |                                    |                    |                 |  | ✓ Yes                | ☐ On                               |
| ™ No □  | Off                        |                                 |                             |  |                                    |                    |                 |  | □ No                 | ✓ Off                              |
| L <sub>up</sub> = ft                                  |                            |                                 |                             |  |                                    |                    |                 |  | L <sub>down</sub> =  | 2600 ft                            |
| •   | eh/h                       | S                               | $_{FF}$ = 56.0 mph Sketch ( | show lanes, L <sub>A</sub> ,               | $S_{FR} = 4$ $L_{D_f} V_{R_f} V_f$ | 10.0 mj            | ph              |  | V <sub>D</sub> =     | 120 veh/                           |
| Conversio   | n to pc/h Ur               | der Base (                      |                             |  |                                    |                    |                 |  |                      |                                    |
| (pc/h)  | V<br>(Veh/hr)              | PHF                             | Terrain                     | %Truck                                     | %Rv                                |                    | f <sub>HV</sub> | f <sub>p</sub>                         | v = V/PHF            | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 5650                       | 0.86                            | Level                       | 2  | 0                                  | 0                  | .990            | 1.00                                   | 663                  | 35                                 |
| Ramp  | 1260                       | 0.86                            | Level                       | 2  | 0                                  | 0                  | .990            | 1.00                                   | 148                  | 30                                 |
| UpStream  |                            |                                 |                             | 1  |                                    | +-                 |                 |  |                      |                                    |
| DownStream  | 120                        | 0.86<br>Merge Areas             | Level                       | 1  | 0                                  | 0                  | .995            | 1.00                                   | 14                   | 0                                  |
| Estimation  |                            | Estimati                        | ion (                       |  | Diverge Areas                      |                    |                 |  |                      |                                    |
| Louination  |                            |                                 |                             |  | LStillati                          | 1011               |                 |  |                      |                                    |
|   |                            | <sub>F</sub> (P <sub>FM</sub> ) |                             |  |                                    |                    |                 | = V <sub>R</sub> + (V <sub>F</sub> - V |                      |                                    |
| L <sub>EQ</sub> =                                     |                            | uation 25-2 or                  |                             |  | L <sub>EQ</sub> =                  |                    |                 | 58.21 (Equation                        |                      |                                    |
| P <sub>FM</sub> =                                     | usin                       | g Equation (E                   | Exhibit 25-5)               |  | P <sub>FD</sub> =                  |                    | 0               | .526 using Ed                          | <b>quation</b> (Exhi | bit 25-12)                         |
| V <sub>12</sub> =                                     | pc/h                       |                                 |                             |  | V <sub>12</sub> =                  |                    |                 | 192 pc/h                               |                      |                                    |
| $V_{3}$ or $V_{av34}$                                 |                            | (Equation 25                    | -4 or 25-5)                 |  | $V_3$ or $V_{av34}$                |                    |                 | 443 pc/h (Equ                          | ation 25-15          | or 25-16                           |
|   | 2,700 pc/h?                |                                 |                             |  |                                    |                    |                 | ☐ Yes 🗹 No                             |                      |                                    |
|   | 1.5 * V <sub>12</sub> /2   |                                 |                             |  |                                    |                    |                 | ☐ Yes ☑ No                             |                      |                                    |
| If Yes,V <sub>12a</sub> =                             | pc/h                       | (Equation 25                    | 5-8)                        |  | If Yes,V <sub>12a</sub> =          | :                  | ı               | oc/h (Equation                         | 25-18)               |                                    |
| Capacity C  | Checks                     |                                 |                             |  | Capacity                           | y Ch               | ecks            |  |                      |                                    |
|   | Actual                     | C                               | apacity                     | LOS F?                                     |                                    |                    | Actual          | Ca                                     | pacity               | LOS F                              |
|   |                            |                                 |                             |  | V <sub>F</sub>                     |                    | 6635            | Exhibit 25-1                           | 4 6780               | No                                 |
| $V_{FO}$  |                            | Exhibit 25-7                    |                             |  | $V_{FO} = V_{F}$                   | - $V_R$            | 5155            | Exhibit 25-1                           | 4 6780               | No                                 |
|   |                            |                                 |                             |  | V <sub>R</sub>                     |                    | 1480            | Exhibit 25-3                           | 3 2100               | No                                 |
| Flow Enter  | ring Merge I               | nfluence A                      | rea                         |  | Flow En                            | terii              | na Dive         | rge Influen                            | ce Area              |                                    |
|   | Actual                     |                                 | Desirable                   | Violation?                                 |                                    |                    | Actual          | Max Desiral                            |                      | Violation                          |
| V <sub>R12</sub>                                      |                            | Exhibit 25-7                    |                             |  | V <sub>12</sub>                    |                    | 4192            | Exhibit 25-14                          | 4400:All             | No                                 |
|   | ervice Deter               | mination (i                     | if not F)                   |  | Level of                           | Ser                | vice De         | eterminatio                            | n (if not l          | <del>-</del> )                     |
| D <sub>R</sub> = 5.475                                | + 0.00734 v <sub>R</sub> + | - 0.0078 V <sub>12</sub> -      | 0.00627 L <sub>A</sub>      |  |                                    | D <sub>R</sub> = - | 4.252 + 0       | 0.0086 V <sub>12</sub> - 0.            | .009 L <sub>D</sub>  |                                    |
| D <sub>R</sub> = (pc                                  | /mi/ln)                    |                                 |                             |  | D <sub>R</sub> = 34                | 1.0 (pc            | c/mi/ln)        |  | _                    |                                    |
| LOS = (Ex   | hibit 25-4)                |                                 |                             |  | LOS = D                            | (Exhi              | bit 25-4)       |  |                      |                                    |
| Speed Det   | ermination                 |                                 |                             |  | Speed D                            | •                  | •               | on                                     |                      |                                    |
|   | it 25-19)                  |                                 |                             |  |                                    |                    | xhibit 25       |  |                      |                                    |
|   | Exhibit 25-19)             |                                 |                             |  |                                    |                    | h (Exhibit      | ,                                      |                      |                                    |
|   | Exhibit 25-19)             |                                 |                             |  | 1 ''                               | -                  | h (Exhibit      |  |                      |                                    |
| 1   | Exhibit 25-19)             |                                 |                             |  | 1.                                 | -                  | h (Exhibit      |  |                      |                                    |
| ,~ iiipii (   |                            |                                 |                             |  | 1 31                               | mp                 |                 | _U IU)                                 |                      |                                    |

|                                      |                          | RAMPS                    | S AND RAM                | IP JUNCTI                  | ONS WOR                               | RKSI               | HEET                 |   |                     |                                    |
|--------------------------------------|--------------------------|--------------------------|--------------------------|----------------------------|---------------------------------------|--------------------|----------------------|---|---------------------|------------------------------------|
| General Infori                       | nation                   |                          |                          | Site Infor                 |                                       |                    |                      |   |                     |                                    |
| Analyst                              | SEB                      |                          | F                        | reeway/Dir of Tr           |                                       | Vorthho            | ound I-87            |   |                     |                                    |
| Agency or Company                    | CHA                      |                          |                          | unction                    |                                       |                    | B Off to W           | /olf  |                     |                                    |
| Date Performed                       | 02/14                    | 1/12                     |                          | urisdiction                |                                       | NYSDO              |                      |   |                     |                                    |
| Analysis Time Period                 | PM                       |                          | А                        | nalysis Year               | 2                                     | 2036 FI            | yover                |   |                     |                                    |
| Project Description                  | Exit 4                   |                          |                          |                            |                                       |                    |                      |   |                     |                                    |
| Inputs                               |                          | l                        |                          |                            |                                       |                    |                      |   |                     |                                    |
| Upstream Adj Ramp                    |                          | Terrain: Level           |                          |                            |                                       |                    |                      |   | Downstrea<br>Ramp   | ım Adj                             |
| Yes On                               |                          |                          |                          |                            |                                       |                    |                      |   | ☐ Yes               | ☐ On                               |
| □ No □ Off                           |                          |                          |                          |                            |                                       |                    |                      |   | ✓ No                | ☐ Off                              |
| L <sub>up</sub> = 2600 f             | t                        |                          |                          |                            |                                       |                    |                      |   | L <sub>down</sub> = | ft                                 |
| V <sub>u</sub> = 1260 v              | ah/h                     | S                        | <sub>FF</sub> = 56.0 mph |                            | $S_{FR} = 40$                         | 0.0 mpl            | h                    |   | V <sub>D</sub> =    | veh/h                              |
|                                      |                          | day Daga (               |                          | show lanes, L <sub>A</sub> | $L_{D}, V_{R}, V_{f}$                 |                    |                      |   | <u> </u>            |                                    |
| Conversion to                        | ) pc/n Und<br>∀          | Т                        |                          | Т                          | 1                                     | 1                  |                      | . 1   |                     |                                    |
| (pc/h)                               | (Veh/hr)                 | PHF                      | Terrain                  | %Truck                     | %Rv                                   | 1                  | f <sub>HV</sub>      | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway                              | 4400                     | 0.86                     | Level                    | 2                          | 0                                     | 0.9                | 990                  | 1.00  | 51                  | 67                                 |
| Ramp                                 | 120                      | 0.86                     | Level                    | 2                          | 0                                     | 0.9                | 990                  | 1.00  |                     | 41                                 |
| UpStream                             | 1260                     | 0.86                     | Level                    | 1                          | 0                                     | 0.9                | 995                  | 1.00  | 14                  | 72                                 |
| DownStream                           |                          | Merge Areas              |                          |                            | -                                     |                    |                      | Diverge Areas                                       |                     |                                    |
| Estimation of                        |                          | iviei ye Ai eas          |                          |                            | Estimation                            | on o               |                      | Diverge Areas                                       |                     |                                    |
|                                      |                          | (D )                     |                          |                            |                                       |                    |                      | \/ . (\/ \/   | \D                  |                                    |
|                                      | $V_{12} = V_F$           |                          | 05.0)                    |                            | <u> </u>                              |                    |                      | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> |                     |                                    |
| L <sub>EQ</sub> =                    |                          | ation 25-2 or            |                          |                            | L <sub>EQ</sub> =                     |                    |                      | Equation 25-8                                       |                     |                                    |
| P <sub>FM</sub> =                    | =                        | Equation (E              | xhibit 25-5)             |                            | P <sub>FD</sub> =                     |                    |                      | .624 using Eq                                       | uation (Exh         | nibit 25-12)                       |
| V <sub>12</sub> =                    | pc/h                     |                          |                          |                            | V <sub>12</sub> =                     |                    |                      | 279 pc/h  |                     |                                    |
| V <sub>3</sub> or V <sub>av34</sub>  |                          | (Equation 25             | -4 or 25-5)              |                            | $V_3$ or $V_{av34}$                   |                    |                      | 888 pc/h (Equ                                       | ation 25-1          | 5 or 25-16)                        |
| Is $V_3$ or $V_{av34} > 2,700$       |                          |                          |                          |                            |                                       | •                  |                      | Yes 🗹 No  |                     |                                    |
| Is $V_3$ or $V_{av34} > 1.5$ *       |                          |                          |                          |                            | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>4</sub> > 1.5 | * V <sub>12</sub> /2 | Yes 🗹 No  |                     |                                    |
| If Yes,V <sub>12a</sub> =            | pc/h                     | (Equation 25             | -8)                      |                            | If Yes,V <sub>12a</sub> =             |                    | p                    | c/h (Equation                                       | 25-18)              |                                    |
| Capacity Che                         | cks                      |                          |                          |                            | Capacity                              | / Che              | ecks                 |   |                     |                                    |
|                                      | Actual                   | Ca                       | pacity                   | LOS F?                     |                                       |                    | Actual               | Ca  | oacity              | LOS F?                             |
|                                      |                          |                          |                          |                            | $V_{F}$                               |                    | 5167                 | Exhibit 25-14                                       | 6780                | No                                 |
| $V_{FO}$                             |                          | Exhibit 25-7             |                          |                            | $V_{FO} = V_{F}$                      | - V <sub>R</sub>   | 5026                 | Exhibit 25-14                                       | 6780                | No                                 |
|                                      |                          |                          |                          |                            | V <sub>R</sub>                        |                    | 141                  | Exhibit 25-3  | 2100                | No                                 |
| Flow Entering                        | Merge In                 | fluence A                | rea                      |                            | <del></del>                           | terin              | g Dive               | rge Influen   | ce Area             |                                    |
|                                      | Actual                   | ľ                        | Desirable                | Violation?                 |                                       | 1                  | Actual               | Max Desirab   |                     | Violation?                         |
| V <sub>R12</sub>                     |                          | Exhibit 25-7             |                          |                            | V <sub>12</sub>                       | 3                  | 279                  | Exhibit 25-14                                       | 4400:All            | No                                 |
| Level of Servi                       | ce Detern                | nination (i              | f not F)                 |                            | Level of                              | Serv               | vice De              | terminatio  | n (if not           | <b>F</b> )                         |
| $D_R = 5.475 + 0.0$                  | 00734 v <sub>R</sub> + 0 | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>   |                            |                                       | ) <sub>R</sub> = 4 | .252 + 0             | .0086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>  |                                    |
| D <sub>R</sub> = (pc/mi/l            | n)                       |                          |                          |                            | D <sub>R</sub> = 29.                  | .3 <b>(pc</b> /    | mi/ln)               | _   |                     |                                    |
| LOS = (Exhibit                       | 25-4)                    |                          |                          |                            |                                       | (Exhib             | oit 25-4)            |   |                     |                                    |
| Speed Determ                         | •                        |                          |                          |                            | Speed D                               |                    |                      | on  |                     |                                    |
| $M_S = $ (Exibit 25                  |                          |                          |                          |                            |                                       |                    | xhibit 25            |   |                     |                                    |
| S <sub>R</sub> = mph (Exhi           |                          |                          |                          |                            |                                       | •                  | (Exhibit             | ,   |                     |                                    |
|                                      | bit 25-19)               |                          |                          |                            |                                       | -                  | (Exhibit             |   |                     |                                    |
|                                      | υπ <b>∠</b> υ-19)        |                          |                          |                            | 1 U                                   | o mpii             | יבאייוטונ            | _5 .5)  |                     |                                    |
| $S_0^{=}$ mph (Exhi<br>S = mph (Exhi |                          |                          |                          |                            | S = 53.                               | 2 mnh              | (Exhibit             | 25-15)  |                     |                                    |

|   |                               | RAMP                                    | S AND RAM                |   |                                     | KNS                                  | пссі                                   |   |                     |                                    |
|---|-------------------------------|---|--------------------------|---|-------------------------------------|--------------------------------------|--|---|---------------------|------------------------------------|
| General Info  | rmation                       |   |                          | Site Infor  | mation                              |                                      |  |   |                     |                                    |
| Analyst<br>Agency or Compan <u>y</u><br>Date Performed<br>Analysis Time Perio | 02/14                         |   | J                        | reeway/Dir of Tr<br>unction<br>urisdiction<br>.nalysis Year | ]<br>]                              | Southb<br>Exit 2V<br>NYSD(<br>2036 F | V Off<br>DT                            |   |                     |                                    |
| Project Description   | Exit 4                        |   |                          |   |                                     |                                      |  |   |                     |                                    |
| Inputs  |                               |   |                          |   |                                     |                                      |  |   | i                   |                                    |
| Upstream Adj Ramp   |                               | Terrain: Leve                           |                          |   |                                     |                                      |  |   | Downstrea<br>Ramp   | m Adj                              |
| ☐ Yes ☐ O   |                               |   |                          |   |                                     |                                      |  |   | ✓ Yes               | ☑ On                               |
| ✓ No ☐ O  | ff                            |   |                          |   |                                     |                                      |  |   | □ No                | ☐ Off                              |
| L <sub>up</sub> = ft  |                               | <u> </u>                                | <sub>FF</sub> = 56.0 mph |   | S <sub>FR</sub> = 4                 | 0 0 mr                               | h                                      |   | L <sub>down</sub> = | 1300 ft                            |
| V <sub>u</sub> = veh/   |                               |   | Sketch (                 | show lanes, L <sub>A</sub>                                  |                                     | 0.0 mp                               | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |   | V <sub>D</sub> =    | 880 veh/h                          |
| Conversion  | to pc/h Und                   | der Base (                              | Conditions               |   |                                     |                                      |  |   |                     |                                    |
| (pc/h)  | V<br>(Veh/hr)                 | PHF                                     | Terrain                  | %Truck  | %Rv                                 |                                      | f <sub>HV</sub>                        | f <sub>p</sub>                                      | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 4150                          | 0.92                                    | Level                    | 2   | 0                                   | 0.                                   | 990                                    | 1.00  | 455                 |                                    |
| Ramp  | 480                           | 0.92                                    | Level                    | 2   | 0                                   | 0.                                   | 990                                    | 1.00  | 52                  | 7                                  |
| UpStream<br>DownStream  | 000                           | 0.00                                    | Lough                    |   | 0                                   | +                                    | 000                                    | 1.00  | 0/                  | /                                  |
| Downstieam  | 880                           | 0.92<br>Merge Areas                     | Level                    | 2   | 0                                   | 0.                                   | 990                                    | 1.00<br>Diverge Areas                               | 96                  | 0                                  |
| Estimation o  |                               | Estimati                                | on c                     |   | biverge rireds                      |                                      |  |   |                     |                                    |
|   |                               | (D )                                    |                          |   | 1                                   |                                      |  | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | \D                  |                                    |
| ı   | $V_{12} = V_F$                | • | OF 0\                    |   |                                     |                                      |  |   |                     |                                    |
| L <sub>EQ</sub> =   |                               | ation 25-2 or<br>Equation (E            |                          |   | L <sub>EQ</sub> =                   |                                      |  | Equation 25-8                                       |                     | :L::: OF 10\                       |
| P <sub>FM</sub> =   | _                             | Equation (E                             | XIIIDIL 20-0)            |   | P <sub>FD</sub> =                   |                                      |  | .622 using Ed                                       | quation (Exil       | IDIL 25-12)                        |
| V <sub>12</sub> =<br>V <sub>3</sub> or V <sub>av34</sub>                      | pc/h                          | /Equation 25                            | 4 or 25 5)               |   | V <sub>12</sub> =                   |                                      |  | 032 pc/h  | otion OF 15         | - OF 40                            |
| $V_3 \text{ or } V_{av34}$<br>Is $V_3 \text{ or } V_{av34} > 2.7$             |                               | (Equation 25                            | -4 01 25-5)              |   | V <sub>3</sub> or V <sub>av34</sub> | · 27                                 |  | 524 pc/h (Equ<br>☐ Yes 🗹 No                         | iation 25-15        | 01 25-16                           |
| Is $V_3$ or $V_{av34} > 2.7$<br>Is $V_3$ or $V_{av34} > 1.5$                  |                               |   |                          |   |                                     |                                      |  | Yes No  |                     |                                    |
| If Yes,V <sub>12a</sub> =   | · <del>-</del>                | s III No<br>(Equation 25                | 0)                       |   | If Yes, $V_{12a} =$                 |                                      |  | oc/h (Equation                                      | 25 10)              |                                    |
| Capacity Ch   |                               | (Equation 23                            | -0)                      |   | Capacity                            |                                      |  | ochi (Equation                                      | 123-10)             |                                    |
| Capacity Cit  | Actual                        | I C                                     | apacity                  | LOS F?  | Capacity                            | <i>y Cii</i>                         | Actual                                 | l Ca  | pacity              | LOS F                              |
|   | Actual                        | <del>i</del> i                          | ариону                   | 1001.   | V <sub>F</sub>                      |                                      | 4556                                   | Exhibit 25-1  | 1                   | No                                 |
| V <sub>FO</sub>   |                               | Exhibit 25-7                            |                          |   | $V_{FO} = V_{F}$                    | - \/                                 | 4029                                   | Exhibit 25-1  | _                   | No                                 |
| *FO   |                               | LATIIDIT 23-7                           |                          |   | V <sub>R</sub>                      | *R                                   |  |   |                     | _                                  |
| [   |                               | £1                                      |                          | 1   | <del></del>                         | 4!                                   | 527                                    | Exhibit 25-3  |                     | No                                 |
| Flow Enterin  | <i>g ivierge in</i><br>Actual | 1                                       | <b>rea</b><br>Desirable  | Violation?  | riow En                             | _                                    | <i>ig Dive</i><br>Actual               | rge Influen  Max Desiral                            |                     | Violation                          |
| V <sub>R12</sub>  | Actual                        | Exhibit 25-7                            | D C SII U D I C          | v ioiation:   | V <sub>12</sub>                     | _                                    | 3032                                   | Exhibit 25-14                                       | 4400:All            | No                                 |
| Level of Serv   | ice Deterr                    |   | f not F)                 | 1   | ·-                                  |                                      |  | eterminatio   | <u> </u>            |                                    |
| $D_{R} = 5.475 + 0$   |                               |   |                          |   |                                     |                                      |  | .0086 V <sub>12</sub> - 0.                          | _                   | /                                  |
| $D_R = 0.475 \cdot C$   |                               | 12                                      |                          |   |                                     |                                      | /mi/ln)                                | 13000 112 0.  | <b>-</b> D          |                                    |
| **  | oit 25-4)                     |   |                          |   |                                     |                                      | bit 25-4)                              |   |                     |                                    |
| Speed Deter   |                               |   |                          |   | Speed D                             | •                                    |  | on  |                     |                                    |
| •   |                               |   |                          |   | <del></del>                         |                                      | xhibit 25                              |   |                     |                                    |
| M <sub>S</sub> = (Exibit 2  |                               |   |                          |   | . 1                                 | •                                    | i (Exhibit                             | ,   |                     |                                    |
|   | nibit 25-19)                  |   |                          |   |                                     | -                                    | ı (Exhibit<br>ı (Exhibit               |   |                     |                                    |
| $S_0 = mph (Ex)$  | nibit 25-19)                  |   |                          |   | <b>□</b> 0- 59                      | ıqııı <del>+</del> .                 | ו (באווטונ                             | 20-18)  |                     |                                    |
| · ·   | nibit 25-14)                  |   |                          |   | S = 53                              | 0                                    | (Exhibit                               | OF 15\  |                     |                                    |

|  |                             |                                  | RAMP               | S AND RAM                          | P JUNCTI   | ONS WO                                | RKS                 | HEET                                  |   |                     |                    |
|--|-----------------------------|----------------------------------|--------------------|------------------------------------|--|---------------------------------------|---------------------|---------------------------------------|---|---------------------|--------------------|
| General  | Inform                      | nation                           |                    | <u> </u>                           | Site Infor   |                                       |                     |                                       |   |                     |                    |
| Analyst<br>Agency or C<br>Date Perforr<br>Analysis Tin | company<br>med<br>ne Period | SEB<br>CHA<br>02/14<br>PM        | /12                | Ju<br>Ju                           | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | avel                                  | Exit 4<br>NYSD      | oound I-87<br>SB Off<br>OT<br>Flyover |   |                     |                    |
| Project Desc   | cription I                  | EXIT 4                           |                    |                                    |  |                                       |                     |                                       |   |                     |                    |
| Inputs   | d! Da                       |                                  | Terrain: Leve      | j                                  |  |                                       |                     |                                       |   | Downstrea           | m Adi              |
| Upstream A   |                             |                                  |                    |                                    |  |                                       |                     |                                       |   | Ramp                |                    |
| ✓ No   |                             |                                  |                    |                                    |  |                                       |                     |                                       |   | ✓ Yes               | ☑ On               |
| IM INO   | ☐ Off                       |                                  |                    |                                    |  |                                       |                     |                                       |   | □ No                | ☐ Off              |
| L <sub>up</sub> =                                      | ft                          |                                  |                    |                                    |  | -                                     | 0.0                 | - L                                   |   | L <sub>down</sub> = | 1585 ft            |
| V <sub>u</sub> =                                       | veh/h                       |                                  | 3                  | $_{\text{FF}}$ = 56.0 mph Sketch ( | show lanes, L <sub>A</sub>                                 | $S_{FR} = 4$ $L_{D'}V_{R'}V_{f}$      | iu.u m              | pn                                    |   | V <sub>D</sub> =    | 1030 veh/l         |
| Conver   | sion to                     | pc/h Und                         | ler Base           | Conditions                         |  |                                       |                     |                                       |   |                     |                    |
| (pc/l  | ٦)                          | V<br>(Veh/hr)                    | PHF                | Terrain                            | %Truck   | %Rv                                   |                     | ${\sf f}_{\sf HV}$                    | f <sub>p</sub>                                      | v = V/PHF           | $x f_{HV} x f_{p}$ |
| Freeway  |                             | 3900                             | 0.92               | Level                              | 2  | 0                                     | 0                   | .990                                  | 1.00  | 42                  | 82                 |
| Ramp   |                             | 830                              | 0.92               | Level                              | 2  | 0                                     | 0                   | .990                                  | 1.00  | 9.                  | 11                 |
| UpStream<br>DownStream                                 | m                           | 1030                             | 0.93               | Level                              | 4  | 0                                     | +                   | .980                                  | 1.00  | 11                  | 30                 |
| Downstream   |                             |                                  | Merge Areas        | Level                              | 1 4  |                                       |                     |                                       | Diverge Areas                                       | 11                  | 30                 |
| Estimation of v <sub>12</sub>                          |                             |                                  |                    |                                    |  | Estimat                               | ion (               |                                       |   |                     |                    |
|  |                             | V <sub>12</sub> = V <sub>F</sub> | (P <sub>EM</sub> ) |                                    |  | 1                                     |                     | V <sub>12</sub> =                     | = V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | P <sub>ED</sub>     |                    |
| L <sub>EQ</sub> =                                      |                             | 12 1                             | ation 25-2 o       | r 25-3)                            |  | L <sub>FO</sub> =                     |                     |                                       | Equation 25-8                                       | ` ''                |                    |
| P <sub>FM</sub> =                                      |                             |                                  | Equation (I        |                                    |  | P <sub>FD</sub> =                     |                     |                                       | .611 using Eq                                       |                     | nibit 25-12)       |
| V <sub>12</sub> =                                      |                             | pc/h                             |                    |                                    |  | V <sub>12</sub> =                     |                     | 2                                     | 971 pc/h  |                     |                    |
| V <sub>3</sub> or V <sub>av34</sub>                    |                             | pc/h (                           | Equation 25        | 5-4 or 25-5)                       |  | V <sub>3</sub> or V <sub>av34</sub>   |                     | 1:                                    | 311 pc/h (Equ                                       | ation 25-1          | 5 or 25-16)        |
| Is V <sub>3</sub> or V <sub>av</sub>                   | <sub>34</sub> > 2,700       | pc/h? ☐ Yes                      | s 🗆 No             |                                    |  | Is V <sub>3</sub> or V <sub>av3</sub> | 34 > 2,             | 700 pc/h?                             | ☐ Yes ☑ No  |                     |                    |
|  |                             | $V_{12}/2  \square \text{ Yes}$  | s 🗆 No             |                                    |  | Is V <sub>3</sub> or V <sub>av3</sub> | <sub>34</sub> > 1.! |                                       | Yes Vo  |                     |                    |
| If Yes,V <sub>12a</sub> =                              |                             |                                  | Equation 25        | 5-8)                               |  | If Yes,V <sub>12a</sub> =             |                     | · · · · · ·                           | c/h (Equation                                       | 25-18)              |                    |
| Capacit  | y Chec                      | ks                               |                    |                                    |  | Capacit                               | y Ch                | 1                                     |   |                     |                    |
|  |                             | Actual                           | C                  | apacity                            | LOS F?   | <del>  ,,</del>                       |                     | Actual                                |   | pacity              | LOS F?             |
| ν,   |                             |                                  |                    |                                    |  | V <sub>F</sub>                        | .,                  | 4282                                  | Exhibit 25-1  | _                   | No                 |
| V <sub>F</sub>   |                             |                                  | Exhibit 25-7       |                                    |  | $V_{FO} = V_{F}$                      | - V <sub>R</sub>    | 3371                                  | Exhibit 25-1  | _                   | No                 |
|  |                             |                                  |                    |                                    |  | V <sub>R</sub>                        |                     | 911                                   | Exhibit 25-3  |                     | No                 |
| Flow En  | tering                      | Merge In                         | Y                  |                                    | Violation?   | Flow En                               | terii               |                                       | rge Influen   |                     | Violation?         |
| V <sub>R1</sub>  |                             | Actual                           | Exhibit 25-7       | Desirable                          | Violation?   | V <sub>12</sub>                       | +                   | Actual<br>2971                        | Max Desirat<br>Exhibit 25-14                        | 4400:All            | No No              |
|  |                             | ce Detern                        |                    | if not F)                          | <u> </u>   | 7                                     |                     |                                       | eterminatio   |                     | <u> </u>           |
|  |                             |                                  |                    | · 0.00627 L <sub>A</sub>           |  |                                       |                     |                                       | .0086 V <sub>12</sub> - 0.                          | •                   | - /                |
|  | (pc/mi/lr                   | ••                               | 12                 | А                                  |  |                                       |                     | c/mi/ln)                              | 12  | D                   |                    |
| 11   | (Exhibit                    | •                                |                    |                                    |  |                                       |                     | ibit 25-4)                            |   |                     |                    |
| Speed L  | •                           |                                  |                    |                                    |  | Speed D                               |                     |                                       | on  |                     |                    |
|  | Exibit 25                   |                                  |                    |                                    |  | <del></del>                           |                     | xhibit 25                             |   |                     |                    |
| _  |                             | oit 25-19)                       |                    |                                    |  | -                                     | •                   | h (Exhibit                            | •   |                     |                    |
|  |                             | oit 25-19)                       |                    |                                    |  | $S_0 = 60$                            | ).2 mpl             | h (Exhibit                            | 25-19)  |                     |                    |
| -  |                             | oit 25-14)                       |                    |                                    |  | S = 52                                | 2.6 mpl             | h (Exhibit                            | 25-15)  |                     |                    |
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|  |                    | MPS AND                                 | RAMP JUN                                      |  |  | <u> </u>                                   |                  |                     |                                      |  |  |
|--|--------------------|---|---|--|--|--|------------------|---------------------|--------------------------------------|--|--|
| General Infor                                  | mation             |   |   | Site Infor                                 | mation   |  |                  |                     |                                      |  |  |
| Analyst<br>Agency or Company<br>Date Performed | 02/1               |   | Jı<br>Jı                                      | reeway/Dir of Tr<br>unction<br>urisdiction |  | Southbound I-8<br>Exit 4 SB On-R<br>NYSDOT |                  |                     |                                      |  |  |
| analysis Time Period                           |                    |   | A   | nalysis Year                               |  | 2036 Flyover                               |                  |                     |                                      |  |  |
| Project Description                            | EXII 4             |   |   |  |  |  |                  |                     |                                      |  |  |
| nputs  |                    | Terrain: Level                          |   |  |  |  |                  | D                   | A -I:                                |  |  |
| Jpstream Adj Ramp<br>☑ Yes   ☐ Or              | 1                  | Tendin. Level                           |   |  |  |  |                  | Downstre<br>Ramp    | ·                                    |  |  |
| No ✓ Of  |                    |   |   |  |  |  |                  | ☐ Yes<br>☑ No       | ☐ On<br>☐ Off                        |  |  |
|  |                    |   |   |  |  |  |                  | <b>I</b> .          |                                      |  |  |
| <sub>-up</sub> = 1585                          | ft                 |   | F/ O  |  | 0  | 10 0 b                                     |                  | L <sub>down</sub> = | ft                                   |  |  |
| $v_{u} = 830 \text{ ve}$                       | eh/h               | 5                                       | $_{\text{FF}} = 56.0 \text{ mph}$<br>Sketch ( | show lanes, L <sub>A</sub> ,               | $S_{FR} = 4$<br>$L_{D'}V_{R'}V_{f}$                                | 10.0 mpn                                   |                  | V <sub>D</sub> =    | veh/h                                |  |  |
| Conversion t                                   | o pc/h Un          | der Base C                              | onditions                                     |  |  |  |                  |                     |                                      |  |  |
| (pc/h)   | V<br>(Veh/hr)      | PHF                                     | Terrain                                       | %Truck                                     | %Rv  | f <sub>HV</sub>                            | f <sub>p</sub>   | v = V/PH            | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| reeway   | 3050               | 0.92                                    | Level   | 2  | 0  | 0.990                                      | 1.00             |                     | 3348                                 |  |  |
| Ramp   | 1030               | 0.93                                    | Level   | 4  | 0  | 0.980                                      | 1.00             |                     | 1130                                 |  |  |
| JpStream                                       | 830                | 0.92                                    | Level   | 2  | 0  | 0.990                                      | 1.00             |                     | 911                                  |  |  |
| DownStream                                     |                    | Merge Areas                             |   |  |  |  | Diverge Are      | 28                  |                                      |  |  |
| Estimation of                                  |                    | ivici ge Ai cas                         |   |  | Estimation of v <sub>12</sub>                                      |  |                  |                     |                                      |  |  |
|  |                    | (D )                                    |   |  |  |  |                  |                     |                                      |  |  |
|  | $V_{12} = V_F$     | • | )   |  |  | V <sub>12</sub>                            | $= V_R + (V_F -$ | $\cdot V_R)P_{FD}$  |                                      |  |  |
| EQ =   |                    | (Equation 2                             |   |  | L <sub>EQ</sub> =  |  |                  | 25-8 or 25-         |                                      |  |  |
| FM =   |                    |   | on (Exhibit 25-5)                             | )  | P <sub>FD</sub> = using Equation (Exhibit 25-12)                   |  |                  |                     |                                      |  |  |
| 12 =   | 2057               | pc/n<br>pc/h (Equatio                   | n 25 4 or 25                                  |  | V <sub>12</sub> = pc/h   |  |                  |                     |                                      |  |  |
| or V <sub>av34</sub>                           | 5)                 | pc/ii (Equalio                          | 11 23-4 01 23-                                |  | V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 25-15 or 25-16) |  |                  |                     |                                      |  |  |
| s $V_3$ or $V_{av34} > 2,70$                   | 0 pc/h? 🗀 Ye       | s 🗹 No                                  |   |  |  | $_{34} > 2,700 \text{ pc/h}^2$             |                  |                     |                                      |  |  |
| s $V_3$ or $V_{av34} > 1.5$                    | V <sub>12</sub> /2 | s 🗹 No                                  |   |  |  | $_{34} > 1.5 * V_{12}/2$                   |                  |                     |                                      |  |  |
| Yes,V <sub>12a</sub> =                         | pc/h               | (Equation 25-                           | 8)  |  | If Yes,V <sub>12a</sub> =  | :  | pc/h (Equ        | ation 25-18)        | )                                    |  |  |
| Capacity Che                                   | cks                |   |   |  | Capacit  | y Checks                                   |                  |                     |                                      |  |  |
|  | Actual             | Ca                                      | pacity  | LOS F?                                     |  | Actu                                       | al               | Capacity            | LOS F                                |  |  |
|  |                    |   |   |  | V <sub>F</sub>   |  | Exhibit          | 25-14               |                                      |  |  |
| $V_{FO}$                                       | 4478               | Exhibit 25-7                            |   | No   | $V_{FO} = V_{F}$   | - V <sub>R</sub>                           | Exhibit          | 25-14               |                                      |  |  |
|  |                    |   |   |  | V <sub>R</sub>   |  | Exhibit          | 25-3                |                                      |  |  |
| low Entering                                   | a Merae In         | fluence A                               | rea   |  |  | tering Div                                 | erae Influ       | ience Are           | <u></u><br>ea                        |  |  |
|  | Actual             |   | esirable                                      | Violation?                                 |  | Actual                                     |                  | esirable            | Violation?                           |  |  |
| V <sub>R12</sub>                               | 3187               | Exhibit 25-7                            | 4600:All                                      | No   | V <sub>12</sub>  |  | Exhibit 25-1     | 1                   |                                      |  |  |
| evel of Serv                                   | ice Deterr         | nination (ii                            | not F)  |  |  | Service L                                  | Determina        | tion (if n          | ot F)                                |  |  |
|  |                    | 0.0078 V <sub>12</sub> - 0.00           |   |  | 1  | D <sub>R</sub> = 4.252 +                   |                  |                     |                                      |  |  |
| ) <sub>R</sub> = 21.6 (pc                      |                    |   | ••  |  |  | c/mi/ln)                                   | 12               | 5                   |                                      |  |  |
| OS = C (Exhil                                  | oit 25-4)          |   |   |  |  | Exhibit 25-4)                              |                  |                     |                                      |  |  |
| Speed Deterr                                   |                    |   |   |  | <u> </u>   | Determina                                  | tion             |                     |                                      |  |  |
| M <sub>S</sub> = 0.310 (Exi                    |                    |   |   |  |  | xhibit 25-19)                              |                  |                     |                                      |  |  |
| -  | (Exhibit 25-19)    |   |   |  |  | ph (Exhibit 25-1                           | 9)               |                     |                                      |  |  |
|  | (Exhibit 25-19)    |   |   |  | 1  | ph (Exhibit 25-1                           |                  |                     |                                      |  |  |
|  | (Exhibit 25-14)    |   |   |  | ľ  | ph (Exhibit 25 1<br>ph (Exhibit 25-1       | •                |                     |                                      |  |  |
| 5 = 52.1 mph                                   |                    |   |   |  |  |  |                  |                     |                                      |  |  |

|  |                          | RAN                                | MPS AND                                 | RAMP JUNC                | CTIONS W   | <u>ORKSHE</u>   | ET   |          |   |                      |                                |
|--|--------------------------|------------------------------------|---|--------------------------|--|---|--|----------|---|----------------------|--------------------------------|
| General In   | formati                  | on                                 |   |                          | Site Infor   | mation  |  |          |   |                      |                                |
| Analyst<br>Agency or Comp<br>Date Performed<br>Analysis Time P | eriod                    | SEB<br>CHA<br>02/14<br>PM          | /12                                     | Jur<br>Jur               | eway/Dir of Tr<br>nction<br>isdiction<br>alysis Year |   | Southboun<br>Exit 5 SB C<br>NYSDOT<br>2036 Flyov | n-Ram    | 0   |                      |                                |
| Project Descript   | ion Exit 4               |                                    |   |                          |  |   |  |          |   |                      |                                |
| Inputs   |                          |                                    |   |                          |  |   |  |          |   |                      |                                |
| Jpstream Adj R   | -                        |                                    | Terrain: Level                          |                          |  |   |  |          |   | Downstre<br>Ramp     | am Adj                         |
|  | On                       |                                    |   |                          |  |   |  |          |   | ✓ Yes                | ☐ On                           |
| ☑ No ☐   | Off                      |                                    |   |                          |  |   |  |          |   | □ No                 | ✓ Off                          |
| - <sub>up</sub> = <b>f</b>                                     | t                        |                                    | S                                       | <sub>-F</sub> = 56.0 mph |  | S <sub>FR</sub> = 4   | 0.0 mph  |          |   | L <sub>down</sub> =  | 4700 ft                        |
| / <sub>u</sub> = ve  | eh/h                     |                                    |   | •                        | how lanes, L <sub>A</sub> ,                          |   | '  |          |   | V <sub>D</sub> =     | 830 veh/h                      |
| Conversio  | n to pc                  | h Und                              | ler Base C                              | Conditions               |  | _   |  |          |   |                      |                                |
| (pc/h)   | (Ve                      | V<br>eh/hr)                        | PHF                                     | Terrain                  | %Truck   | %Rv   | f <sub>HV</sub>                                  |          | $f_p$   | v = V/PH             | $F \times f_{HV} \times f_{p}$ |
| Freeway  | 32                       | 250                                | 0.92                                    | Level                    | 2  | 0   | 0.990  |          | 1.00  |                      | 3568                           |
| Ramp   | 6                        | 70                                 | 0.87                                    | Level                    | 1  | 0   | 0.995  |          | 1.00  |                      | 774                            |
| UpStream<br>DownStream   | 0                        | 30                                 | 0.92                                    | Level                    | 2  | 0   | 0.990  | $\dashv$ | 1.00  |                      | 911                            |
| Downsteam  | 0                        |                                    | Verge Areas                             | Levei                    | Z  | 0   | 0.990  | D        | iverge Areas  |                      | 911                            |
| Estimation of v <sub>12</sub>                                  |                          |                                    |   |                          |  | Estimati  | ion of v   |          | ivorgo / irous                                      |                      |                                |
|  |                          | / <sub>12</sub> = V <sub>F</sub> ( | ( P <sub>EM</sub> )                     |                          |  |   | \  | /\       | / + (\/ - \/  | \D                   |                                |
| - <sub>EQ</sub> =  |                          |                                    | • | 25-2 or 25-3)            |  | _   | ,  |          | ′ <sub>R</sub> + (V <sub>F</sub> - V<br>Equation 25 |                      | ٥)                             |
| P <sub>FM</sub> =  |                          |                                    |   | on (Exhibit 25-5)        |  | L <sub>EQ</sub> =   |  |          | -   |                      |                                |
| / <sub>12</sub> =  |                          | 2190 p                             |   | 511 (EXIIIDII 20 0)      |  | P <sub>FD</sub> =   |  |          | sing Equati   | on (Exhibit          | (25-12)                        |
|  |                          |                                    |   | n 25-4 or 25-            |  | V <sub>12</sub> =   |  |          | c/h   | 05.45                | - 47)                          |
| $V_3$ or $V_{av34}$  |                          | 5)                                 |   |                          |  | $V_3$ or $V_{av34}$ pc/h (Equation 25-15 or 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No |  |          |   |                      |                                |
| Is $V_3$ or $V_{av34} >$                                       |                          |                                    |   |                          |  |   |  |          |   |                      |                                |
| Is $V_3$ or $V_{av34} >$                                       | 1.5 * V <sub>12</sub> /2 | ☐ Yes                              | s 🗹 No                                  |                          |  |   |  |          | Yes No  |                      |                                |
| f Yes,V <sub>12a</sub> =                                       |                          | pc/h (                             | Equation 25                             | -8)                      |  | If Yes,V <sub>12a</sub> =   |  | p        | c/h (Equati   | on 25-18)            |                                |
| Capacity (   | Checks                   |                                    |   |                          |  | Capacity  | y Chec   | ks       |   |                      | ,                              |
|  | A                        | ctual                              | Ca                                      | pacity                   | LOS F?   |   | 1  | Actual   |   | apacity              | LOS F                          |
|  |                          |                                    |   |                          |  | V <sub>F</sub>  |  |          | Exhibit 25-   | 14                   |                                |
| $V_{FO}$   | 4                        | 342                                | Exhibit 25-7                            |                          | No   | $V_{FO} = V_{F}$  | - V <sub>R</sub>                                 |          | Exhibit 25-   | 14                   |                                |
|  |                          |                                    |   |                          |  | V <sub>R</sub>  |  |          | Exhibit 25  | -3                   |                                |
| Flow Ente  |                          |                                    | fluence A                               |                          |  | Flow En   |  |          | ge Influe   |                      |                                |
| .,   |                          | ctual                              |   | )esirable                | Violation?   | ļ   | Actua  |          | Max Des   | irable               | Violation?                     |
| V <sub>R12</sub>   |                          | 964                                | Exhibit 25-7                            | 4600:All                 | No   | V <sub>12</sub>   |  |          | exhibit 25-14                                       |                      | 1.5                            |
| Level of S   |                          |                                    |   |                          |  | <del>1                                    </del>  |  |          | terminatio  |                      | ot F)                          |
|  |                          | 34 V <sub>R</sub> + 0              | 0.0078 V <sub>12</sub> - 0.00           | J62/ L <sub>A</sub>      |  |   |  | 2 + 0.   | 0086 V <sub>12</sub> - 0                            | 0.009 L <sub>D</sub> |                                |
| IX   | 1 (pc/mi/ln)             | ١                                  |   |                          |  | . "   | c/mi/ln)   | 4)       |   |                      |                                |
|  | Exhibit 25-4             |                                    |   |                          |  |   | xhibit 25  |          | n   |                      |                                |
| Speed Det  |                          |                                    |   |                          |  | <b>Speed D</b> D <sub>s</sub> = (E  | xhibit 25-19                                     |          | 11  |                      |                                |
| 3  | (Exibit 25-1             |                                    |   |                          |  |   | xnibil 25-19<br>oh (Exhibit                      | -        |   |                      |                                |
|  | mph (Exhibit             |                                    |   |                          |  | I .,  |  |          |   |                      |                                |
| F20.   | mph (Exhibit             | 25-19)                             |   |                          |  | $S_0 = m_1$   | oh (Exhibit                                      | ∠ɔ-19)   |   |                      |                                |
| U  | mph (Exhibit             |                                    |   |                          |  | 1   | oh (Exhibit                                      | OF 45\   |   |                      |                                |

|   |  |                              | FREEWA                 | Y WEAV   | ING WOF  | KSHEE          | T               |  |              |  |  |
|---|--|------------------------------|------------------------|----------|--|----------------|-----------------|--|--------------|--|--|
| Genera  | l Informat   | ion                          |                        |          | Site Info  | rmation        |                 |  |              |  |  |
| Analyst<br>Agency/Co<br>Date Perfor<br>Analysis Tir | med  | SEB<br>CHA<br>02/14/<br>PM   | 12                     |          | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | Exit 2<br>NYSD  | orthbound<br>E on to 2W of<br>OOT<br>Flyover     | f            |  |  |
| Inputs  |  |                              |                        |          |  |                |                 |  |              |  |  |
| Weaving nu  | ee-flow speed, and spe | 11                           | 56<br>4<br>815<br>Leve |          | Weaving type<br>Volume ratio<br>Weaving ratio              | , VR           |                 | A<br>0.2<br>0.3                                  |              |  |  |
| Conver  | sions to p   | c/h Unde                     | r Base C               | ondition | 1  |                |                 |  |              |  |  |
| (pc/h)  | V  | PHF                          | Truck %                | RV %     | E <sub>T</sub>   | E <sub>R</sub> | f <sub>HV</sub> | fp   | V            |  |  |
| $V_{o1}$  | 4260   | 0.86                         | 2                      | 0        | 1.5  | 1.2            | 0.990           | 1.00   | 5003         |  |  |
| $V_{02}$  | 0  | 0.92                         | 2                      | 0        | 1.5  | 1.2            | 0.990           | 1.00   | 0            |  |  |
| V <sub>w1</sub>                                     | 880  | 0.92                         | 2                      | 0        | 1.5  | 1.2            | 0.990           | 1.00   | 966          |  |  |
| $V_{w2}$  | 490  | 0.92                         | 2                      | 0        | 1.5  | 1.2            | 0.990           | 1.00   | 537          |  |  |
| $V_{\rm w}$   |  | •                            |                        | 1503     | $V_{nw}$   |                | •               | •  | 5003         |  |  |
| V   | 7  |                              |                        |          | 1  | ı              |                 |  | 6506         |  |  |
| Weavin  | g and No   | n-Weavin                     | g Speeds               | 5        |  |                |                 |  |              |  |  |
|   |  |                              | Unconstr               | 4        |  |                |                 | trained  |              |  |  |
| o (Eyhibit 2  | 1 ()   | Weaving<br>0.15              |                        |          | ving (i = nw)  | Weavir         | ng (i = w)      | Non-Wea  | ving ( = nw) |  |  |
| a (Exhibit 2<br>b (Exhibit 2                        |  | 2.20                         |                        | -        | 035<br>00  |                |                 |  |              |  |  |
| c (Exhibit 2  |  | 0.97                         |                        |          | 30   |                |                 | <del>                                     </del> |              |  |  |
| d (Exhibit 2  | ,  | 0.80                         |                        | <u> </u> | 75   |                |                 |  |              |  |  |
| Weaving intens Weaving and n                        |  | 1.45                         |                        |          | 79   |                |                 |  |              |  |  |
| speeds, Si (mi/                                     | h)   | 33.7                         |                        |          | .73  |                |                 |  |              |  |  |
| Maximum r   | lanes required<br>number of lanes If Nw < Nw   | s, Nw (max)<br>(max) unconst | rained operati         | ion      |  |                | v (max) constr  | rained operati                                   | on           |  |  |
|   | g Segmer   |                              |                        |          | Service,   | and Cap        | acity           |  |              |  |  |
|   | egment speed,  |                              |                        | 38.89    |  |                |                 |  |              |  |  |
|   | egment density   | , D (pc/mi/ln)               |                        | 41.83    |  |                |                 |  |              |  |  |
| Level of ser  |  | ) o (no/h)                   |                        | E        |  |                |                 |  |              |  |  |
|   | base condition   |                              | /b)                    | 6571     |  |                |                 |  |              |  |  |
|   | a 15-minute fl   |                              |                        | 6506     |  |                |                 |  |              |  |  |
|   | a full-hour vol  | ume, c <sub>h</sub> (ven/m   | )                      | 5690     |  |                |                 |  |              |  |  |
| Notes   |  |                              |                        |          |  |                |                 |  |              |  |  |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such

|  | BASIC F   | REEWAY SE              | EGMENTS V  | VORKSHEET  |   |  |
|--|---|------------------------|--|--|---|--|
| Second   S | Br C.   | 150 (600)<br>1750<br>0 |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, v <sub>p</sub> FFS, LOS, v <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AADT FFS, LOS, N | Output  LOS, S, D  N, S, D  v <sub>p</sub> , S, D  LOS, S, D  N, S, D  v <sub>p</sub> , S, D |
| o 400 800  | ) 1200<br>Flow Rate (pc/h/lr  | 1600 2000<br>()        | 2400   |  |   |  |
| General Information  | 1 major 1 de agos (10 major 1 de 20 major 1 | - 747                  | Site Infor   | mation   |   |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period   | SEB<br>CHA<br>02/14/12<br>AM  |                        | Highway/Dir<br>From/To<br>Jurisdiction<br>Analysis Yea | ection of Travel<br>ar   | Southbound I-8<br>Exit 5 to Exit 4<br>NYSDOT<br>2046 Flyover  | 7  |
| Project Description Exit 4  Oper.(LOS)   |   |                        | Des.(N)  |  | ☐ Planning D  | )ata   |
| Flow Inputs  |   |                        | DC3.(14)   |  | L i lailing L   | , ata  |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K  | 5850  | veh/h<br>veh/day       | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub>     | d Buses, P <sub>T</sub>  | 0.92<br>2<br>0  |  |
| Peak-Hr Direction Prop, D DDHV = AADT x K x D Driver type adjustment   | 1.00  | veh/h                  | General Ter<br>Grade %                                 |  | Level<br>mi   |  |
| Calculate Flow Adjustr   | 1.00  |                        |  |  | 1.2   |  |
| f <sub>p</sub><br>E <sub>⊤</sub>   | 1.00<br>1.5   |                        | E <sub>R</sub>   | E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990   |  |
| Speed Inputs   | 1.5   |                        |  | ed Adj and FFS   |   |  |
| Lane Width   | 12.0  | ft                     |  | za Auj ana 11 c  | ,   | :/le   |
| Rt-Shoulder Lat. Clearance   | 6.0   | ft                     | f <sub>LW</sub>  |  |   | mi/h   |
| Interchange Density  | 0.50  | I/mi                   | f <sub>LC</sub>  |  |   | mi/h   |
| Number of Lanes, N   | 3   |                        | $f_ID$   |  |   | mi/h   |
| FFS (measured)   | 56.0  | mi/h                   | f <sub>N</sub>   |  |   | mi/h   |
| Base free-flow Speed, BFFS   |   | mi/h                   | FFS  |  | 56.0  | mi/h   |
| LOS and Performance  | Measures  |                        | Design (N  | 1)   |   |  |
| Operational (LOS)<br>$V_p = (V \text{ or DDHV}) / (PHF x N f_p)$   |   | pc/h/ln                | Design (N)<br>Design LOS                               |  | f <sub>HV</sub> x   | pc/h   |
| S<br>D = v <sub>p</sub> / S  | 53.0<br>40.4  | mi/h<br>pc/mi/ln       | $f_p$ )<br>S<br>D = $v_p$ / S                          |  |   | mi/h<br>pc/mi/ln   |
| LOS  | E   |                        |  | umber of Lanes, N  |   |  |
| Glossary   |   |                        | Factor Lo  | cation   |   |  |
| N - Number of lanes<br>V - Hourly volume<br>v <sub>p</sub> - Flow rate<br>LOS - Level of service<br>DDHV - Directional design ho   | S - Speed D - Density FFS - Free-flow BFFS - Base fr  |                        | E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23  | s23-8, 23-10<br>s 23-8, 23-10, 23-1<br>-12<br>S, v <sub>p</sub> - Exhibits 23-2  | 1 f <sub>LC</sub> - E<br>f <sub>N</sub> - E   | Exhibit 23-4<br>Exhibit 23-5<br>xhibit 23-6<br>Exhibit 23-7                                  |
| Copyright © 2007 University of Florida,  |   |                        | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,                 | rM Version 5.3   | Generated   | 9/18/2013 8:58 A   |
| Jopyngin & 2001 Offiversity of Florida,  | , rrigino mosciveu  |                        | L( ')+,  | VEISION 5.3  | Jeneraleu.  | 0,10,2010 0.00   |

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|  |   |                            | FREEWA                | Y WEAV       | ING WOR  | KSHEE          | Т              |   |              |
|--|---|----------------------------|-----------------------|--------------|--|----------------|----------------|---|--------------|
| Genera   | Informat  | ion                        |                       |              | Site Info  | rmation        |                |   |              |
| Analyst<br>Agency/Cor<br>Date Perfor<br>Analysis Tir | med   | SEB<br>CHA<br>02/14/<br>PM | 12                    |              | Freeway/Dir<br>Weaving Seg<br>Jurisdiction<br>Analysis Yea | Location       | Exit 2<br>NYSI | Southbound<br>W on to 2E of<br>OOT<br>Flyover | ff           |
| Inputs   |   |                            |                       |              |  |                |                |   |              |
| Weaving nu<br>Weaving se<br>Terrain                  | e-flow speed,<br>mber of lanes,<br>g length, L (ft) | , N                        | 56<br>4<br>810<br>Lev | el           | Weaving type<br>Volume ratio,<br>Weaving ratio             | , VR           |                | A<br>0.2<br>0.2                               |              |
| Conver   | sions to p  | oc/h Unde                  | er Base C             | ondition     | _  |                |                |   |              |
| (pc/h)   | V   | PHF                        | Truck %               | RV %         | E <sub>T</sub>   | E <sub>R</sub> | $f_{HV}$       | fp  | V            |
| $V_{o1}$   | 3500  | 0.92                       | 2                     | 0            | 1.5  | 1.2            | 0.990          | 1.00  | 3842         |
| $V_{o2}$   | 0   | 0.92                       | 2                     | 0            | 1.5  | 1.2            | 0.990          | 1.00  | 0            |
| V <sub>w1</sub>                                      | 880   | 0.92                       | 2                     | 0            | 1.5  | 1.2            | 0.990          | 1.00  | 966          |
| $V_{w2}$   | 150   | 0.92                       | 2                     | 0            | 1.5  | 1.2            | 0.990          | 1.00  | 164          |
| V <sub>w</sub>                                       | 1   |                            | •                     | 1130         | $V_{nw}$   |                |                | · ·   | 3842         |
| V  |   |                            |                       |              |  | l              |                |   | 4972         |
| Weavin   | g and No  | n-Weavin                   | g Speeds              | 3            |  |                |                |   |              |
|  |   |                            | Unconstr              |              |  |                |                | trained                                       |              |
| o /Fubibit 0   | 4.7   | Weaving                    |                       | 7            | ving (i = nw)  | Weavii         | ng (i = w)     | Non-Wea                                       | ving ( = nw) |
| a (Exhibit 2)<br>b (Exhibit 2)                       |   | 0.15                       |                       | <del>}</del> | .00  |                |                |   |              |
| c (Exhibit 2   |   | 0.97                       |                       | <del>}</del> | .30  |                |                |   |              |
| d (Exhibit 2   | 1-6)  | 0.80                       | )                     | 0.           | .75  |                |                | ì   |              |
| Weaving intens                                       |   | 1.11                       |                       | 0.           | .55  |                |                |   |              |
| Weaving and no<br>speeds, Si (mi/l                   |   | 36.7                       | 7                     | 44           | .66  |                |                |   |              |
| Number of I<br>Maximum n                             | anes required<br>umber of lanes                     | s, Nw (max)                | ·                     |              | 1.26<br>1.40   |                |                | -   |              |
|  | If Nw < Nw  | , ,                        |                       |              |  |                | w (max) const  | rained operati                                | on           |
| Weavin   | g Segmei  | nt Speed,                  | Density,              |              | f Service,   | and Cap        | pacity         |   |              |
|  | gment speed,  |                            |                       | 42.58        |  |                |                |   |              |
|  | gment density                                       | , D (pc/mi/ln)             |                       | 29.19        |  |                |                |   |              |
| Level of ser   |   |                            |                       | D            |  |                |                |   |              |
|  | base condition                                      |                            | n \                   | 6584         |  |                |                |   |              |
| <u> </u>   | a 15-minute fl                                      |                            |                       | 6519<br>5997 |  |                |                |   |              |
|  | 1 1 1   |                            |                       |              |  |                |                |   |              |
| Notes  |   |                            |                       |              |  |                |                |   |              |

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp

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2/17/2012

b. Capacity constrained by basic freeway capacity.

c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in

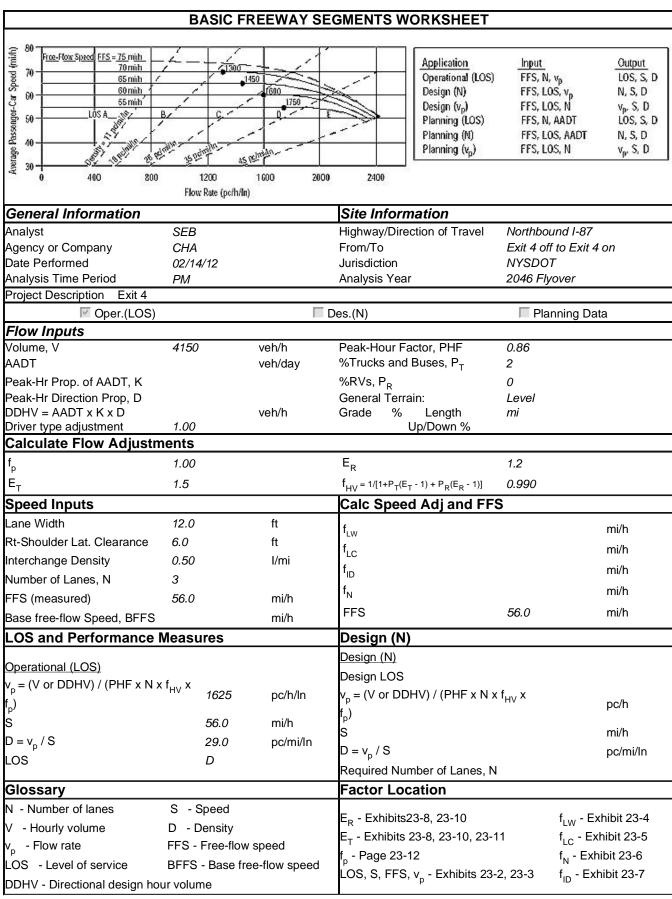
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.

f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).

g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such

h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such

i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such



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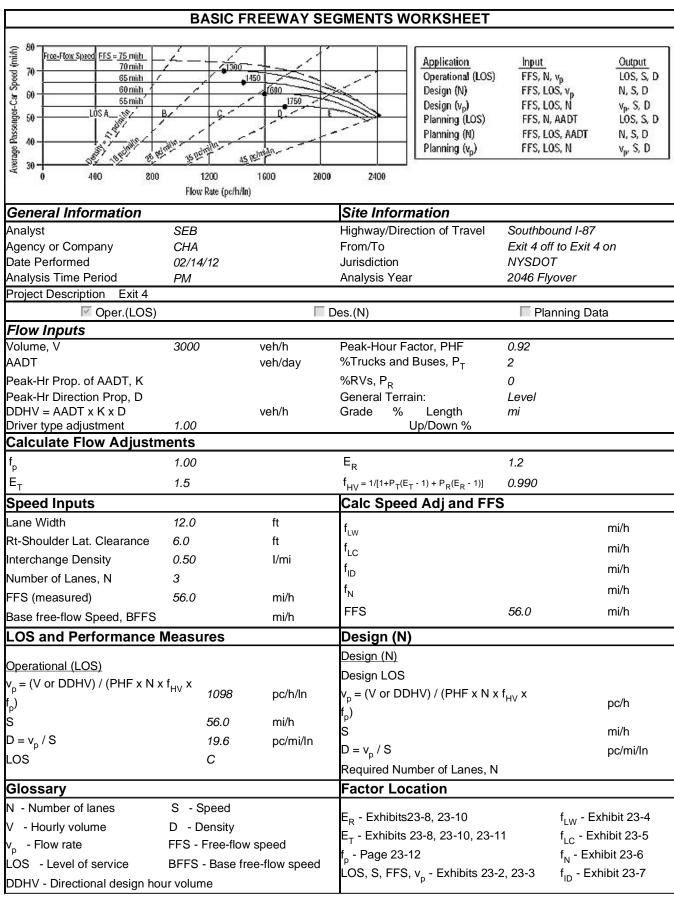
|  | BASIC F  | REEWAY SE                               | EGMENTS W  | ORKSHEET   |  |   |
|--|--|---|--|--|--|---|
| 80 Froe-Flow Speed FFS = 75 mith 70 mith 70 mith 90 mi | B C C  | 450<br>6600<br>1750<br>0<br>1600<br>200 | 0 2400   | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input<br>FFS, N,<br>FFS, LO<br>FFS, LO<br>FFS, N,<br>FFS, LO | S, v <sub>p</sub> N, S, D<br>S, N v <sub>p</sub> , S, D<br>AADT LOS, S, D<br>S, AADT N, S, D          |
| General Information  | Flow Rate (pc/h/lin                                    | I.                                      | Site Inform  | nation   |  |   |
| Analyst Agency or Company Date Performed Analysis Time Period Project Description Exit 4   | SEB<br>CHA<br>02/14/12<br>PM                           |   |  | ction of Travel  | Northbou<br>Exit 4 off<br>NYSDOT<br>2046 Flye                | to Exit 4 off   |
| Oper.(LOS)   |  | Г                                       | Des.(N)  |  | ☐ Plar   | nning Data  |
| Flow Inputs Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D  | 4250   | veh/h<br>veh/day                        | Peak-Hour Fa<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terra                             | Buses, P <sub>T</sub>  | 0.86<br>2<br>0<br>Level                                      |   |
| DDHV = AADT x K x D Driver type adjustment  Calculate Flow Adjustr   | 1.00   | veh/h                                   | Grade %  | Length<br>Up/Down %  | mi   |   |
| fp   | 1.00   |   | E <sub>R</sub>   |  | 1.2  |   |
| E <sub>T</sub>   | 1.5  |   |  | T - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]  | 0.990  |   |
| Speed Inputs   |  |   |  | d Adj and FFS  |  |   |
| Lane Width   | 12.0   | ft                                      |  | <u> </u>   |  | :/l-  |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft                                      | f <sub>LW</sub>  |  |  | mi/h  |
| Interchange Density  | 0.50   | I/mi                                    | f <sub>LC</sub>  |  |  | mi/h  |
| Number of Lanes, N   | 3  |   | $f_{ID}$   |  |  | mi/h  |
| FFS (measured)   | 56.0   | mi/h                                    | $f_N$  |  |  | mi/h  |
| Base free-flow Speed, BFFS   | 00.0   | mi/h                                    | FFS  |  | 56.0   | mi/h  |
| LOS and Performance  | Measures   |   | Design (N)   | <u> </u>   |  |   |
| Operational (LOS) $v_p = (V \text{ or DDHV}) / (PHF \times N)$ $f_p)$ $S$ $D = v_p / S$ $LOS$  |  | pc/h/ln<br>mi/h<br>pc/mi/ln             | $\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DD})$ $f_p)$ $S$ $D = v_p / S$ | HV) / (PHF x N x   | f <sub>HV</sub> x  | pc/h<br>mi/h<br>pc/mi/ln  |
| Glossary   |  |   | Factor Loc   | mber of Lanes, N   |  |   |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service  | S - Speed D - Density FFS - Free-flow BFFS - Base free |   | E <sub>R</sub> - Exhibits2<br>E <sub>T</sub> - Exhibits<br>f <sub>p</sub> - Page 23-             | 23-8, 23-10<br>23-8, 23-10, 23-1   |  | $f_{LW}$ - Exhibit 23-4<br>$f_{LC}$ - Exhibit 23-5<br>$f_N$ - Exhibit 23-6<br>$f_{ID}$ - Exhibit 23-7 |
| DDHV - Directional design ho   |  |   |  | Version 5.3  |  | nerated: 2/17/2012 1:53   |

HCS+TM Version 5.3

|  | DASIC FI   | REEWAY SE           | GMENTS W   | ORKSHEET   |   |  |
|--|--|---------------------|--|--|---|--|
| State   Stat | B C C  | 150<br>1600<br>1750 |  | Application Operational (LOS) Design (N) Design (v <sub>p</sub> ) Planning (LOS) Planning (N) Planning (v <sub>p</sub> ) | Input FFS, N, V <sub>p</sub> FFS, LOS, V <sub>p</sub> FFS, LOS, N FFS, N, AADT FFS, LOS, AADT FFS, LOS, N | Output  LOS, S, D  N, S, D  v <sub>p</sub> , S, D  LOS, S, D  N, S, D  v <sub>p</sub> , S, D |
| 0 400 800  | 1200<br>Flow Rate (pc/h/lin)                           | 1600 2000           | 2400   |  |   |  |
| General Information  |  |                     | Site Inform  | nation   |   |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period   | SEB<br>CHA<br>02/14/12<br>PM                           |                     | Highway/Dire<br>From/To<br>Jurisdiction<br>Analysis Yea            | ection of Travel   | Southbound I-87<br>Exit 5 to Exit 4<br>NYSDOT<br>2046 Flyover   | •  |
| Project Description Exit 4  Oper.(LOS)   |  |                     | Des.(N)  |  | ☐ Planning D  | ata  |
| Flow Inputs  |  |                     | Des.(N)  |  | - Flaming D   | ala  |
| Volume, V<br>AADT<br>Peak-Hr Prop. of AADT, K<br>Peak-Hr Direction Prop, D   | 3900   | veh/h<br>veh/day    | Peak-Hour F<br>%Trucks and<br>%RVs, P <sub>R</sub><br>General Terr | l Buses, P <sub>T</sub>  | 0.92<br>2<br>0<br>Level   |  |
| DDHV = AADT x K x D<br>Driver type adjustment  | 1.00   | veh/h               | Grade %  | Length<br>Up/Down %  | mi  |  |
| Calculate Flow Adjustr   |  |                     |  |  |   |  |
| f <sub>p</sub>   | 1.00   |                     | E <sub>R</sub>   |  | 1.2   |  |
| E <sub>T</sub>   | 1.5  |                     |  | E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]   | 0.990   |  |
| Speed Inputs   | 10.0   |                     | Calc Spee  | d Adj and FFS  | 5   |  |
| Lane Width   | 12.0   | ft                  | $f_{LW}$   |  |   | mi/h   |
| Rt-Shoulder Lat. Clearance   | 6.0  | ft<br>L/:           | $f_{LC}$   |  |   | mi/h   |
| Interchange Density  | 0.50   | I/mi                | $f_{ID}$   |  |   | mi/h   |
| Number of Lanes, N   | 3  | • 4                 | f <sub>N</sub>   |  |   | mi/h   |
| FFS (measured)   | 56.0   | mi/h                | FFS  |  | 56.0  | mi/h   |
| Base free-flow Speed, BFFS   | N4   | mi/h                |  |  |   | ,  |
| Operational (LOS)  v <sub>p</sub> = (V or DDHV) / (PHF x N :   |  | pc/h/ln             | Design (N) Design LOS  V <sub>D</sub> = (V or DE                   | )<br>DHV) / (PHF x N x   | f <sub>HV</sub> x   |  |
| f <sub>p</sub> )   |  |                     | f <sub>p</sub> )   |  |   | pc/h   |
| $S$ $D = v_p / S$  | 56.0<br>25.5   | mi/h<br>pc/mi/ln    | $S$ $D = v_p / S$  |  |   | mi/h<br>pc/mi/In   |
| LOS  | С  |                     | · · ·  | mber of Lanes, N   |   | -  |
| Glossary   |  |                     | Factor Lo  | cation   |   |  |
| N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service  | S - Speed D - Density FFS - Free-flow BFFS - Base free |                     | f <sub>p</sub> - Page 23-  | 23-8, 23-10, 23-1  | 1 f <sub>LC</sub> - E<br>f <sub>N</sub> - Ex  | exhibit 23-4<br>xhibit 23-5<br>thibit 23-6<br>xhibit 23-7                                    |
| DDHV - Directional design ho   | All Rights Reserved                                    |                     | LIGO TM  | Version 5.3  | Company of  | /18/2013 10:31 <i>A</i>  |

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Generated: 9/18/2013 10:31 AM



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ATTACHMENT F
ACCIDENT ANALYSIS



## MEMORANDUM DEPARTMENT OF TRANSPORTATION

TO: A. Trichilo, R-1 Design, 3<sup>rd</sup> floor

FROM: M. Kennedy, R-1 Traffic Engineer, 4th floor

SUBJECT: Updated Accident History for PIN 1721.51

187 Exits 3/4/5

Town of Colonie, Albany County

DATE: March 3, 2011

Attached please find updated accident data for the subject project, as you requested on 3/23/10. The accident data covers the 3.25 year study period from 1/1/07 to 3/31/10. The current High Accident Location (HAL) period is 11/1/07 to 10/31/09. There were no HALs on the section of I87 from RM 2016 to 2042 studied. NY 910B, Wolf Road, was a Priority Investigation Location from RM 1010 to 1015 and from RM 1016 to 1019. NY 155, Watervliet-Shaker Road, was a Safety Deficient Location from RM 3058 to 3060.

I87, the Northway, is a six lane divided Urban Principal Arterial Interstate highway with full control of access. There were 303 accidents on the section of I87 evaluated during the study period. The accident rate of 0.87 ACC/MVM is less than the expected accident rate of 1.10 ACC/MVM for similar highways statewide. The predominant accident type is rear end accidents. There were 52 accidents during the morning peak from 6 am to 9 am and 105 accidents occurred during the peak evening commute from 3 pm to 6 pm. There was one fatality and no accidents involving pedestrians or bicyclists. Accident summaries and a collision diagram of the southbound Exit5/Exit 4 merge/diverge area service road are provided.

There were 52 accidents in the first section of NY 910B studied and the accident rate is 2.41 ACC/MVM. This rate is less than the expected rate of 3.59 ACC/MVM for four lane divided Urban Principal Arterial highways with free access statewide. The majority of the accidents consisted of rear end and turning accidents due to traffic congestion. There was one accident involving a pedestrian and no accidents involving bicyclists. Of the 53 accidents on this section of highway with pavement condition reported, 14 (26%) occurred on wet pavement and none occurred on snow/ice/slush pavements. There were 7 accidents during the morning peak evening commute hours from 6 am to 9 am and 16 accidents occurred during the peak evening commute hours from 3 pm to 6 pm. A copy of Highway Safety Investigation report 1-1-0409 is attached.

A. Trichilo, R-1 Design PIN 1721.5, p. 2 of 3 March 3, 2011

There were 132 accidents in the second section of NY 910B studied and the accident rate is 9.46 ACC/MVM. This rate is greater than the expected accident rate of 3.59 ACC/MVM for four lane divided Urban Principal Arterial highways with free access statewide. The majority of the accidents consisted of rear end and turning accidents due to traffic congestion, particularly at the signalized intersection with Albany County Route 151, Albany-Shaker Road, at the RM 1019. There were no accidents involving pedestrians or bicyclists. Of the 127 accidents on this section of highway with pavement condition reported, 25 (20%) occurred on wet pavement and 5 (4%) occurred on snow/ice/slush pavements. There were 11 accidents during the morning peak commute hours from 6 am to 9 am and 34 accidents occurred during the peak evening commute hours from 3 pm to 6 pm. A signal study, completed 12/28/08, at the intersection with Ulenski Drive at RM 1017 resulted in no safety recommendation. A copy of Highway Safety Investigation report 1-1-0477, which includes the signal study, is attached.

NY 155, Watervliet-Shaker Road, is a four lane undivided Urban Minor Arterial highway with free access. There were 46 accidents on the SDL section of NY 155, from RM 3058 to 3061, evaluated during the period 1/1/07 to 9/30/10. The accident rate of 8.79 ACC/MVM is greater than the expected accident rate of 4.27 ACC/MVM for similar highways statewide. The predominant accident type is rear end accidents. Of the 46 accidents on this section of highway with pavement condition reported, 2 (4%) occurred on wet pavement and 3 (6%) occurred on snow/ice/slush pavements. There were 7 accidents during the morning peak from 6 am to 9 am and 12 accidents occurred during the peak evening commute from 3 pm to 6 pm. There were no accidents involving pedestrians or bicyclists.

Albany County Route 151, Albany-Shaker Road, carries NY Touring Route 155. There were 55 accidents on the section of CR 151 studied, from D'Alessandro Boulevard to Wolf Road. The predominant accident type is rear end accidents. Of the 52 accidents on this section of highway with pavement condition reported, 12 (23%) occurred on wet pavement and 2 (4%) occurred on snow/ice/slush pavements. There were 8 accidents during the morning peak from 6 am to 9 am and 18 accidents occurred during the peak evening commute from 3 pm to 6 pm. There were no accidents involving pedestrians or bicyclists. A signal study, completed 12/22/10, at the signalized intersection with Old Wolf Road and the I87 SB on ramp, resulted in a safety recommendation to refresh the pavement markings. A copy of Highway Safety Investigation report 1-1-0495, which documents the signal study, is attached.

Albany County Route 153, Old Wolf Road, carries NY Touring Route 155. There were 55 accidents on the section of CR 153 studied, from the intersection with AC Rout 151 to Northway Lane, which includes the signalized intersection with the ramp

A. Trichilo, R-1 Design PIN 1721.5, p. 3 of 3 March 3, 2011

from I87 SB. The predominant accident type is rear end accidents. Of the 28 accidents on this section of highway with pavement condition reported, 7 (25%) occurred on wet pavement and 1 (4%) occurred on snow/ice/slush pavements. There were 6 accidents during the morning peak from 6 am to 9 am and 13 accidents occurred during the peak evening commute from 3 pm to 6 pm. There were no accidents involving pedestrians and one involving a bicyclist. The accidents at the SB ramp junction ate plotted on the collision diagram with the ramp accidents.

The majority of the accidents on all the sections of highway reviewed in this study occurred during peak hours and are congestion related. Any project alternative that includes congestion mitigation measures will enhance the overall safety performance, in particular at the signalized junctions with the Exit 4 ramps and Wolf Road. We have no additional safety recommendations to make for the project as a result of our review of this accident history.

If you have any questions concerning this study, please contact Mike Doody of this office at 388-0372.

MJK:MED Attachments

cc: J. Rutnik, R-1 Traffic, 4th floor

## ACCIDENT SUMMARY SHEET

MUNICIPALITY Town of Colonie COUNTY Albany

LOCATION 187' RM 875-1108-2016 TO 2042 PIN HST # 1721.51

TIME PERIOD 1/1/07 TO 3/31/10 NO.OF MONTHS 39

| Accident Type No.  | of Accidents                  | Pavement   | No. of Accidents                         |
|--|-------------------------------|--|--|
| Right Angle Rear End Overtaking Left Turn Debvis Sideswipe/Head-on Right Turn Fampment   | 149<br>57<br>9<br>1<br>5<br>3 | Dry<br>Wet<br>Snow/Ice<br>Unknown                | 223<br>43<br>35<br>2<br>303              |
| Parked Vehicle Pedestrian Bicycle Animal Deer/Twkey Fixed Object w/Utility Poles w/Guide Rail w/Sign Posts w/Trees w/Ditch-Embank. w/ fevice | 12                            | Weather Clear Cloudy Rain Snow Sleet Fog Unknown | No. of Accidents  147 94 22 31 5 2 2 303 |
| TOTAL  | 303                           |  | <del></del>                              |

| Light Cond              | <u>itions</u> <u>N</u> | No. of Accidents | Accident                    | Severity | No. of Accidents |
|-------------------------|------------------------|------------------|-----------------------------|----------|------------------|
| Day<br>Night<br>Unknown |                        | 221              | Fatal<br>Injury<br>Property | Damage   | 1<br>66<br>236   |
|                         | TOTAL                  | 303              |                             | TOTAL    | 303              |

Program id: sass1601

# NYSDOT Safety Information Management System Expected Accident Rates State Highways - 2009

Page 1

Date 02/16/11 12:38:21

Includes Period from 01-NOV-2007 to 31-OCT-2009

Highway/Intersection

Classification Code: 18 FULL ACCESS, URBAN, DIVIDED, 6 LANE

Classification Type: A = ALL ACCIDENTS

|    | Accident Category         | Mean Rate<br>(acc/mvm) | 95th Percentile Rate (acc/mvm) |
|----|---------------------------|------------------------|--------------------------------|
| 01 | OVERALL RATE              | 1.10                   | 3.29                           |
| 02 | FATAL                     | .0                     | .02                            |
| 03 | INJURY                    | .40                    | 1.26                           |
| 04 | PROPERTY DAMAGE ONLY      | .69                    | 2.25                           |
| 05 | NON-REPORTABLE            | .01                    | .04                            |
| 11 | DRY ROAD                  | .74                    | 2.18                           |
| 12 | WET ROAD                  | .21                    | .78                            |
| 13 | SNOW/ICE/SLUSH ROAD       | .09                    | .60                            |
| 14 | ALL OTHER - ROAD SURFACE  | .05                    | .26                            |
| 21 | LEFT-TURN                 | .01                    | .05                            |
| 22 | REAR-END                  | .40                    | 1.29                           |
| 23 | OVERTAKING                | .15                    | .56                            |
| 24 | RIGHT-ANGLE               | .02                    | .09                            |
| 25 | RIGHT-TURN                | .0                     | .02                            |
| 26 | HEAD-ON                   | .0                     | .02                            |
| 27 | SIDESWIPE                 | .0                     | .03                            |
| 28 | OTHER - MULTI. VEHICLE    | .15                    | .51                            |
| 41 | COLL W/PEDESTRIAN         | .01                    | .03                            |
| 42 | COLL W/BICYCLE            | .0                     | .0                             |
| 43 | COLL W/ANIMAL/TRAIN/OTHER | .05                    | .28                            |
| 44 | FO:UTILITY/LIGHT POLES    | .01                    | .06                            |
| 45 | FO:GRAIL/MBARRIER/CUSHION | .15                    | .73                            |
| 46 | FO:SIGN/CURB/FENCING      | .02                    | .14                            |
| 47 | FO:DITCH/BRIDGE/CULVERT   | .02                    | .14                            |
| 48 | FO:TREE/HYDRANT/OTHER     | .02                    | .14                            |
| 49 | RUN-OFF-ROAD/OVERTURN     | .01                    | .08                            |
| 50 | NON COLLISION             | .02                    | .12                            |

# NYSDOT Safety Information Management System Accident Severity Summary

Intersection & Non-Intersection Accidents

Date: 02/16/11 12:35

Complete-Accident Data From NYSDMV Is Only Available thru 30-SEP-2010

Route: 871 Highway Location Ref Mrkr Range: 87111082016 - 87111082042

Dates: 01-JAN-2007 thru 31-MAR-2010 Traffic Volume: 108,250

| Total of<br>Fatal Accd | Total of<br>Injury Accd | Total of PDO Accd | Total of<br>Non-Reportable | Total Number of Accidents | Accident<br>Rate |
|------------------------|-------------------------|-------------------|----------------------------|---------------------------|------------------|
| 1                      | 70                      | 158               | 73                         | 302                       | .87              |

Accident rate for linear section is accidents per million vehicle miles.

NYSDOT Safety Information Management System Summary Report By Segment And/Or Intersection

Date: 02/16/11 12:35

Intersection & Non-Intersection Accidents

Complete Accident Data From NYSDMV is Only Available thru 30-SEP-2010

|                         | I E                   |                    | m                               | ♥             | ~             | 2             | -             | 2             | 0             |               | æ             | 2             | S             | 2               | -                          | 4             | 0             | r=v4          | m             | pared.         | 0                | 2             | m               | p             | 0             | N             | 5               | 4             | <b>←</b> 1    |
|-------------------------|-----------------------|--------------------|---------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-----------------|----------------------------|---------------|---------------|---------------|---------------|----------------|------------------|---------------|-----------------|---------------|---------------|---------------|-----------------|---------------|---------------|
|                         |                       | *                  |                                 |               |               |               |               |               |               |               |               |               |               |                 |                            |               |               |               |               |                |                  |               |                 |               |               |               |                 |               |               |
|                         | CONDITTON<br>DAY NIGH | *                  | m                               | m             | 9             | m             | 7             | œ             | 9             | 9             | 00            | 12            | 12            | 2               | υ)                         | 10            | m             | 4             | 4             | 0.7            | ₩.               | σ             | 2               | 4,            |               | 4             | 17              | in.           | m             |
|                         | T.TGHT                | *                  | -4                              | 0             | <b>,</b> ~√   | 0             | 0             | 0             | 0             | m             | r             | m             | 0             | 0               | 0                          | 7             |               | 0             | 0             | 0              | ~                | ;q            | 0               | 0             | 0             | 0             | 0               | 0             | 0             |
|                         | TRUCK I.              |                    | 0                               | Ħ             | 0             | r             | 0             |               | 0             | 0             | p-uf          | 7             | 2             | 0               | -                          | 0             | 0             | mł            | 0             | 0              | H                | 2             | 0               | 2             | 0             | 2             | 0               | m             | 0             |
| Σ                       | ED&                   | D<br>* + 大克<br>引 * | 0                               | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0               | 0                          | 0             | 0             | 0             | 0             | 0              | 0                | 0             | 0               | 0             | 0             | 0             | 0               | 0             | 0             |
| ි<br>I                  | ACCIDENTS<br>FIXED P  | 790<br>* *         | 2                               | -             | 0             | 0             |               | 3             | 0             | 3             | 4             | 9             | 5             | 2               |                            | 2             | 0             | 3             | 7             | 2              | <del>, - 1</del> | 0             | 0               | 2             | 2             | 2             | 2               | 2             |               |
| -2007                   | OF ACC                | XOAU<br>* *        | ←4                              | 2             | Н             | -             |               | М             | H             | 0             | 2             | 4             | m             | Н               | 2                          | 7             | 0             | 0             | 0             | 4              | 0                | 2             | 1               | 0             |               | -             | 4.              | 1             | 0             |
|                         | NUMBER<br>N/R         | Y.                 | 7                               | 3             | 4             | 2             | т             | 2             | 5             | m             | 4             | 2             | т             | 2               | Н                          | n             | m             | 0             | Н             | т              | 2                | m             | 0               | 0             | т             | 2             | 4               | 4             | 0             |
| ES:                     | PDO N                 |                    | 2                               | 3             | 4             | 2             | 4             | 4             | 0             | 9             | 7             | 10            | 6             | -               | 7                          | æ             | m             | т             | 2             | т              | H                | 2             | 4               | 4             | 7             | m             | 12              | 4             | т             |
|                         | LNI                   |                    | Н                               | Н             | 0             | H             | П             | 4             | Н             |               | <del></del> 1 | 2             | 2             | 2               | т                          | Ŋ             | 0             | 2             | 4             | 2              | 2                | 4             | Н               | ᠬ             | Н             | H             | 9               | 2             | 7             |
| 32042                   | FTL                   |                    | 0                               | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0             | 0               | 0                          | 0             | 0             | 0             | 0             | 0              | 0                | 0             | 0               | 0             | 0             | 0             | 0               | 0             | 0             |
| 87I                     | TOTAL F               |                    | 7                               | 7             | 80            | 2             | ∞             | 10            | 9             | 10            | 12            | 17            | 17            | 2               | 9                          | 16            | 4             | 5             | 7             | 11             | 5                | 12            | 5C              | 5             | 11            | 9             | 22              | 10            | Ŋ             |
| LOCATION: 87111082016 - | DESCRIPTION           |                    | COLONIE VILLAGE/COLONIE TOWN LI |               |               |               |               |               |               |               |               |               |               | RAMP TO WOLF RD | RAMP FROM ALBANY SHAKER RD |               |               |               |               | 4P FROM NY 155 |                  |               | 4P FROM WOLF RD |               |               |               | RAMP TO WOLF RD |               |               |
| HIGHWAY I               |                       |                    | COLONIE V                       |               |               |               |               |               |               |               |               |               |               | NB OFF          | SB ON                      |               |               |               |               | SB ON RAMP     |                  |               | NB ON RAMP      |               |               |               | SB OFF          |               |               |
|                         | INI.                  |                    | 10                              |               | ~~            | *             | 0             | _ 1           | ~1            | ~             |               | 10            | 9             | 60 9            | 6 10                       | 1             | æ             | Æ             | -             | ) 12           |                  | ~ 1           | 0 01            | (m)           |               | 2             | 5 13            | 9             | 1             |
| ROUTE: 871              | REFERENCE             |                    | 871 1108 2016                   | 871 1108 2017 | 87I 1108 2018 | 87I 1108 2019 | 87I 1108 2020 | 87I 1108 2021 | 87I 1108 2022 | 87I 1108 2023 | 87I 1108 2024 | 87I 1108 2025 | 87I 1108 2026 | 87I 1108 2026   | 87I 1108 2026              | 87I 1108 2027 | 871 1108 2028 | 87I 1108 2029 | 871 1108 2030 | 87I 1108 2030  | 871 1108 2031    | 87I 1108 2032 | 871 1108 2032   | 871 1108 2033 | 87I 1108 2034 | 871 1108 2035 | 87I 1108 2035   | 87I 1108 2036 | 87I 1108 2037 |

\*\*\* EXCLUDES PICKUPS & VANS

\*\* EXCLUDES PARTIALLY CODED NON-REPORTABLES

NYSDOT Safety Information Management System Summary Report By Segment And/Or Intersection Intersection & Non-Intersection Accidents

Page: 2

Date: 02/16/11 12:35

Complete Accident Data From NYSDMV Is Only Available thru 30-SEP-2010

| 01-JAN-2007 - 31-MAR-2010       | NUMBER OF ACCIDENTS | R WET FIXED PED& TRUCK LIGHT CONDITION ROAD OBJ BIKE *** DWN/DSK DAY NIGHT ** ** ** ** | *<br>* | 3 1 4 0 3 0 13 2 | 0 0 5 0 0 0 3 2          | 3 3 1 0 0 0 10 1 | 0 0 3 0 0 0 0 3          | 1 1 2 0 1 0 6 4 | 0 0 0 0 0 0 2 0           | 2 1 0 0 2 0 8 1 | 3 1 0 0 1 0 3 2 | 73 43 67 0 27 14 216 69      |
|---------------------------------|---------------------|--|--------|------------------|--------------------------|------------------|--------------------------|-----------------|---------------------------|-----------------|-----------------|------------------------------|
| DATES: 0                        | DN                  | PDO N/R  |        | 10               | 4                        | 7                | æ                        | 80              | 2                         | 4               | Н               | 158                          |
| Ω                               | ı                   | INJ  |        | 2                | ٦                        | Н                | 0                        | Н               | 0                         | 2               | 7               | 70                           |
| 87111082042                     | s<br>ì              | FTL  |        | 0                | 0                        | 0                | 0                        | 0               | 0                         | П               | 0               | H                            |
| 871110                          | ı                   | TOTAL  |        | 15               | 5                        | 11               | e                        | 10              | 2                         | 6               | 5               | 302                          |
| HIGHWAY LOCATION: 87111082016 - |                     | INT. DESCRIPTION   |        |                  | 15 NB OFF RAMP TO NY 155 |                  | 14 SB OFF RAMP TO NY 155 |                 | 16 NB ON RAMP FROM NY 155 |                 |                 | ROUTE TOTAL EXCLUDES 999 RMS |
| ROUTE: 87I                      |                     | REFERENCE IN   |        | 87I 1108 2038    | 87I 1108 2038 1          | 87I 1108 2039    | 87I 1108 2039 1          | 871 1108 2040   | 87I 1108 2040 1           | 87I 1108 2041   | 87I 1108 2042   |                              |

\*\*\* ENCLUDES PICKUPS & VANS

# NYSDOT Safety Information Management System Summary Papart By Assidant Catagory

# Summary Report By Accident Category

Page: 1

Date: 02/16/11 12:36

# Intersection & Non-Intersection Accidents

Complete Accident Data From NYSDMV Is Only Available thru 30-SEP-2010

ROUTE: 871 HIGHWAY LOCATION 871 1108 2016 - 871 1108 2042 DATES: JAN-01-2007 - MAR-31-2010

### REPORTABLE ACCIDENTS BY YEAR AND SEVERITY

| TIME PERIOD  | FATAL            | INJURY              | P-D-O                | NON-REPORTABLE      | TOTALS                |
|--|------------------|---------------------|----------------------|---------------------|-----------------------|
| JAN-01-2007 - DEC-31-2007<br>JAN-01-2008 - DEC-31-2008<br>JAN-01-2009 - DEC-31-2009<br>JAN-01-2010 - MAR-31-2010 | 0<br>1<br>0<br>0 | 25<br>20<br>20<br>5 | 56<br>45<br>44<br>13 | 30<br>15<br>24<br>4 | 111<br>81<br>88<br>22 |
| TOTALS   | 1                | 70                  | 158                  | 73                  | 302                   |

| TE 1    | 156a (3/76)  |  | Page 1 of                                 |
|---------|--|--|---|
| 1.      | IDENT. NO.: [  | STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION   | MAIN OFFICE USE:                          |
|         |  | TRAFFIC AND SAFETY DIVISION  | DIVISION FILE                             |
|         | a city of Colonie  | HIGHWAY SAFETY INVESTIGATION REPORT  | REVIEWED BY                               |
| OCATION | ☐ VILLAGE \  | (SEE INSTRUCTIONS ON REVERSE)  | SCHEDULED FOR B&A                         |
| OCA     | ROUTE NO. OR STREET NAME   |  | ROM OR AT REFERENCE MARKE                 |
| 7       | NY 155 / Water vliet   | Shaka Rd 879 1   | 5'5'  1'1'0'1 3'0'5                       |
|         | At Intersection With ROUTE NO. OR STREET N (If Applicable)   |  | TO REFERENCE MARKER                       |
|         | (If Applicable) I 87 Ex  | 17 5 11'   | S'S' 11'0'1 3'0'                          |
| 2.      | REASON FOR INVESTIGATION  (a) IDENTIFIED BY ACCIDENT SURVEILLANCE  (b) POLICE HAZARD REPORT  (c) RESPONSE TO COMPLAINT OR INQUIRY  (d) REGIONALLY INITIATED PIN 1721.5  (e) OTHER (Explain)  | (b) TRAFFIC CONTE  |   |
| 4.      | DISCUSSION (Use reverse if additional space is required (a) PROBLEMS IDENTIFIED  | - check box if reverse is used  )  |   |
|         | Su attack  |  |   |
|         | * Management Commission of the |  |   |
|         | (b) PROPOSED SOLUTION  | Reduction I  | (   |
| 7       | * Management Commission of the | Reduction I  | index Severity Ra-<br>2.42                |
| 7       | (b) PROPOSED SOLUTION  | Reduction I  | (   |
| 2       | (b) PROPOSED SOLUTION' 2009 SDL RM 3058 TD   | Reduction I  | - (                                       |
| 5.      | (b) PROPOSED SOLUTION' 2009 SDL RM 3058 TD   | Reduction I  | 2.42                                      |
| 5.      | (c) ACTION TAKEN  ACCIDENT EXPERIENCE  PERIOD PERIOD NUMBER OF ACCIDENTS  Of BEGINNING Fatal Injury Property   | Reduction I  3060 7.37  6. BENEFIT/COST ANALYSIS (see Check box if Benefit/Cost Calculary)   | 2.42                                      |
| 5.      | (c) ACTION TAKEN  ACCIDENT EXPERIENCE  The PERIOD BEGINNING Fatal Accidents MONTH YEAR MONTH YEAR Accidents Accidents Accidents Accidents Accidents  | Reduction I  3060 7.37  6. BENEFIT/COST ANALYSIS (see Check box if Benefit/Cost Calculated)  | 2.42                                      |
| 5.      | (c) ACTION TAKEN  ACCIDENT EXPERIENCE  PERIOD BEGINNING Fatal Injury Property Damage Accidents Accidents Accidents   | Reduction I  3060 7.37  6. BENEFIT/COST ANALYSIS (see Check box if Benefit/Cost Calculate  PRINCIPAL INVESTIBATOR  May Company  The Company of the Cost Control of the Cost Cost Control of the Cost Cost Cost | 2.42 e instructions) eations are attached |
| 5.      | (c) ACTION TAKEN  ACCIDENT EXPERIENCE  The PERIOD BEGINNING Fatal Accidents  | Reduction I 3060 7.37  6. BENEFIT/COST ANALYSIS (see Check box if Benefit/Cost Calculary   | 2.42 e instructions) ations are attached  |

HSI # 1-1-0100 NY 155, RM 155-1101-3058 to 3061 Town of Colonie, Albany County

## Problems Identified

NY Route 155 was identified as a Safety Deficient Location (SDL) from RM 3058 to 3060 based on reportable accidents during the period 11/1/07 to 10/31/09. We evaluated the 0.4 mile section from RM 3058 to 3061 to include all the ramps to and from the Northway Exit 5. This section of NY 155 is a four lane undivided Urban Minor Arterial highway with free access traveling east-west. The highway travel lanes are 12 feet wide and there are 4 foot shoulders. The posted speed limit is 40 MPH. Pavement, pavement markings and signing are satisfactory.

Eastbound NY 155, Watervliet Shaker Road, is intersected from the north by Sherwood Drive in a stop controlled T-intersection at RM 3058. At RM 3059 are the Exit 5 SB on and off ramps. The intersection is controlled with a three color traffic signal. At RM 3060 Old Niskayuna Road, Albany County Route 152, intersects NY 155 from the south in a stop controlled T-intersection. Also at RM 3060 just east of Old Niskayuna Road, is an intersection with Swayzee Drive to the south, Swayzee Drive is one-way SB. At RM 3061 are the I87 Northway Exit 5 NB on and off ramps to the north opposite Holly Lane to the south. The intersection is controlled with a three color traffic signal. Also at RM 3061 just east of the signalized intersection, Feiden Lane intersects NY 155 from the south in a stop controlled T-intersection.

During the 45 month accident study period from 1/1/07 to 9/30/10 there were 46 total accidents. The accident rate was 8.79 ACC/MVM, which is greater than the expected accident rate of 4.27 ACC/MVM for similar highways statewide. Of the 46 accidents with pavement condition reported, there were 2 (4%) wet pavement accidents and 3 (6%) snow/ice pavement accidents. Overall, 23 of the 46 accidents occurred at the two signalized intersections, including 8 rear end accidents, 8 left turn accidents, and 3 right angle accidents. There were 7 accidents during the morning peak from 6 am to 9 am and 12 accidents during the evening peak from 3 pm to 6 pm. There is no apparent treatable pattern of accidents.

# **Proposed Solution**

The scope of PIN 1721.51, I87/NY910B interchange (Exit 4) reconstruction, has been expanded to possibly include work at Exit 5. We have no safety improvements to offer for the project at this time as a result of this review of the accident history.

### Actions Taken

Memo to R-1 Design, dated 2/24/11.

# NYSDOT Safety Information Management System Accident Severity Summary

# Intersection & Non-Intersection Accidents

Date: 01/31/11 14:27

Complete Accident Data From NYSDMV Is Only Available thru 30-SEP-2010

Route: 155 Highway Location Ref Mrkr Range: 155 11013058 - 155 11013061

Dates: 01-JAN-2007 thru 30-SEP-2010 Traffic Volume: 9,560

| Total of<br>Fatal Accd | Total of<br>Injury Accd | Total of PDO Accd | Total of<br>Non-Reportable | Total Number of Accidents | Accident<br>Rate |
|------------------------|-------------------------|-------------------|----------------------------|---------------------------|------------------|
| 0                      | 17                      | 26                | 3                          | 46                        | 8.79             |

Accident rate for linear section is accidents per million vehicle miles.

NYSDOT Safety Information Management System Summary Report By Segment And/Or Intersection Intersection & Non-Intersection Accidents

Page: 1

Date: 01/31/11 14:27

Complete Accident Data From NYSDMY Is Only Available thru 30-SEP-2010

|                                  | TTON<br>NIGHT  | 0               | 0             | 0             | 4                              | гH            | 2                       | 0             | 0                | 2                                  | σ                            |
|----------------------------------|--|-----------------|---------------|---------------|--------------------------------|---------------|-------------------------|---------------|------------------|------------------------------------|------------------------------|
|                                  | }  | S               | , <b>-</b>    | e             | H                              | 0             | 12                      | 2             |                  | 4                                  | 34                           |
|                                  | LIGHT COND DWN/DSK DAX                               | 0               | 0             | 0             | 0                              | 0             | 0                       | 0             | 0                | et                                 | -1                           |
| 2010                             | RUCK 1   | 0               | 0             | 0             | 2                              | 0             | rd                      | 0             | 0                | 0                                  | т                            |
| 30-SEP-2010                      | ED&<br>IKE<br>**                                     | 0               | 0             | 0             | 7                              | 0             | 0                       | 0             | 0                | 0                                  | <b>←</b> t                   |
| n                                | CIDENT<br>FIXED<br>OBJ                               | 0               | 0             | 0             | 0                              | Н             | 0                       | 0             | 0                | 1                                  | 2                            |
| 01-JAN-2007                      | NUMBĒR OF ACCIDENTS<br>N/R WET FIXED P<br>ROAD OBJ B | 0               | 0             | П             | ٦                              | 0             | П                       | Н             | 0                | 0                                  | ₫,                           |
| 01-JA                            | NUMBĒI<br>N/R  | Н               | 0             | 0             | r-1                            | 0             | 0                       | 0             | 0                |                                    | m                            |
| DATES:                           | PDO  | 0               | 0             | 0             | 7                              | 1             | 12                      |               | <del>, - 1</del> | 4                                  | 26                           |
|                                  | LNI  | , <del>c4</del> | -             | Н             | 7                              | 0             | ю                       | 1             | 0                | n                                  | 17                           |
| 01306                            | I EI EI EI EI EI EI EI EI EI EI EI EI EI             | 0               | 0             | 0             | 0                              | 0             | 0                       | 0             | 0                | 0                                  | 0                            |
| 155 1101306                      | TOTAL  | 2               | Н             |               | 15                             | ₽             | 15                      | 2             | Н                | ∞                                  | 46                           |
| HIGHWAY LOCATION: 155 11013058 - | . DESCRIPTION  |                 | SHERWOOD DR   |               | 187 SB ON & OFF RAMPS - EXIT 5 |               | CR 152 OLD NISKAYUNA RD | SWAYZEE DR    |                  | 187 NB ON & OFF RAMPS & HOLLY LANE | ROUTE TOTAL EXCLUDES 999 RMS |
|                                  | INT.   |                 | 95            |               | 93                             |               | 86                      | 95            |                  | 96                                 |                              |
| ROUTE: 155                       | REFERENCE  | 155 1101 3058   | 155 1101 3058 | 155 1101 3059 | 155 1101 3059                  | 155 1101 3060 | 155 1101 3060           | 155 1101 3060 | 155 1101 3061    | 155 1101 3061                      |                              |

\*\*\* EXCLUDES PICKUPS & VANS

# **ACCIDENT SUMMARY SHEET**

| Municipality Town of Colonie   | County ALBANY  |
|--|--|
| Location Ny Route 155. Ren 155-1101-3058 10  | 306/ HSI# 1-1-0100                                   |
| Time Period ////07 - ///30//0  | No. of Months 47                                     |
| Accident Type No. of Accidents   | Pavement Condition No. of Accidents                  |
| Rear End   | Dry Wet 2 Snow / Ice / Slush Unknown 2               |
| Right Turn Parked Vehicle Debris Pedestrian Bicycle Animal   | TOTAL 48  Weather No. of Accidents                   |
| Backing Fixed Object  W/ Utility Poles  W/ Guide Rail / Barrier  W/ Sign Post  W/ Trees  W/ Ditch / Embankment  W/ | Clear 29 Cloudy 74 Rain 2 Snow 2 Sleet Fog Unknown 2 |
| TOTAL 48   | TOTAL <u>48</u>                                      |
| Light Conditions No. of Accidents  | Accident Severity No. of Accidents                   |
| Day 37 Night /0 Unknown _/   | Property Damage Injury Fatal  30 /8                  |
| TOTAL 48   | TOTAL 48   |
|  |  |
|  |  |
|  |  |
|  |  |

# NYS DEPARTMENT OF TRANSPORTATION OFFICE OF TRAFFIC SAFETY & MOBILITY / OFFICE OF MODAL SAFETY & SECURITY COLLISION DIAGRAM # 3

Sheet 10

| Municipality TOWN OF COLONIE County ALB   | 'ANY   | HSI # 1-1-0(00 Case #   |  |
|---|--|---|--|
| Intersection NY RUTE 155 RM 155-1101-3058 - RM  | 3061   | File DMV/5/ms/  | ALIS   |
| Period 4 Years 0 Months From 1/1/07   | To 12/31/10  | By  | <u>/                                    </u> |
| SHERWOOD DRIVE STORMAN SHERWOOD DRIVE STORMAN | THE CONTRACTOR OF THE CONTRACT | B AND ON P RAMP  ONCH TO SEE  SEE  SEE  SEE  SEE  SEE  SEE  SEE | ONLY ONLY                                    |
| ON TAMP   | OLD JUNE DR<br>JISKAJUNE DR<br>JISKAJUNE DR<br>JISKAJUNE DR  | <i></i>   |  |
|   | CR 17"   |   |  |
| CVMDOLC   | RAANI  | NER OF COLLISION  |  |
| SYMBOLS  ←—— Moving Vehicle ←—— Pedestrain  | Rear-er  |   | ad-on  |
| ← M - Motorcycle ← B - Bicycle  | Overtaki   | ng  |  |
| ←→→→ Backing Vehicle ☐ Fixed Object   | Out of co  | 7111O1 <del></del>  | -turn  |
| Stopped Vehicle O Personal Injury  Parked Vehicle Fatal Injury  | Skidding Overturn  | ì   | it-angle                                     |

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAMY)

TE 213 (9/79)

| 10 01 10 01 10 01 10 01 10 01 01 01 01 0                   | 14/08 16<br>12/08 19. |
|--|-----------------------|
| GE OF - GE OF - FROM / / / / / / / / / / / / / / / / / / / | 3/4/08                |

DETAILS OF ACCIDENT HISTORY FOR LOSATION (AS SHOWN ON COLLISION DIAGRAMY)

(20)

TE 213 (9/79)

T SHEET

t

OF

Sieet/Hail/Freezing Rain Fog/Smog/Smoke Other < 21.5 1100 11/82/1 WEATHER 7 ~ Cloudy P Clear Rain Snow 200 on BYEBUEH 3 ``  $\overline{z}$ CASE NO. V 0 3 10 DATE N OF. - 76 6 4 G 6 G 高かか FILE 200 \_ ВҰ FRONT TKONT DESCRIPTION 1 Snow/Ice Slush Other M Ś (V) ş ROADWAY SURFACE CONDITION 1. Dry 4. Snow/Ic 2. Wet 5. Slush 3. Muddy 10. Other WENTOFF U -Bump, Ŷ 0 3  $\mathcal{L}$ 55 W U, MAKNE LEFT, WAVE 3 WB J. MAKING LEFT, WAVED J. STRUCK RI FR J. ? 103 Palled INFRINT. OF 7. 1270 3 JANES とのア 7 ノルシン B. U. TURNS LEFT > 3000 47 ST.CA. X 33 AS CREP, S S 5  $(\underline{\mathcal{M}})$ Use Codes from MV 104 Police Report see back of this form for codes 77 WISUL 893 3 3 TURNED LUKNES CHANGED  $\sim$ 14.11 180 SB ROADWAY CHARACTER
1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Grade
6. Curve and Hillcrest 74 12 U K AT INTERSECTION WITH/OR BETWEEN 1 STRUCK FEL W AF K RE W (<u>\rac{1}{2}</u> Š ر ح ~ <u>`</u> Š ب د S う 'n > 3 Š  $|\rho|$  (  $|\rho|_{\mathcal{O}}$  | ROUTE NO. OR STREET NAME 2 3 10 W 33 53 K E B  $\mathbb{N}_{\mathbb{R}}$  $\infty$  $\mathcal{K}$ 3  $\mathbb{M}$ 3 . 3 ე გ Ø 3 マ Ų 3 3 305 3059 3060 3060 2060 3060 530% 3058 3060 13061 3059 20 3060 306/ RM 2061 Daylight Dawn Dusk Dark Road Lighted Dark Road Unlighted 155-1106 LIGHT CONDITIONS
1. Daylight
2. Dawn
3. Dusk
4. Dark Road Lighted
5. Dark Road Unlighted APPARENT CONTRIBUTING X **FACTORS** 2 C 1 5 1 20 6 1 0 1 8 T ì Do 5 6 1 1 7 N ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories 6 N ٠. **МЕАТНЕЯ** 2 M M N ROADWAY SURFACE CONDITION N (e) CHARACTER YAWGAOR OR IDENT. W Ţ 7 6 CONDITIONS 7 THOIL 00 000 500 3 Ö 000 0 Sol 0 4 F 9 H (3) H 5 0 Ę 过 Crare. SEVERITY N N 2 N 3 N N N (4)2 3 1 NO, OF VEH. 26,00116" 56,31 Jest/ 0750 2007 2/20 47 8/21 TIME D. 6510 アング 1 125 1 1213 24 10% 3 (m) Ó 17. 20 4LBAN. 50 8 60 ☑ TOWN □ CITY □ VILLAGE OF \_ FROM 113/10 501 60/ 0 01/22 112/10 3/4/10 9 11710 122/10 11/24/10 0 TIME PERIOD DATE 18/ ( ) 10/12 DIAGRAM NO. 9 ~ C COUNTY NUMBER MONTHS 42 Pro 30 9 7 7 2 5 3 7 9 3 20 7  $\bigcirc$ 3 W 5 9 × ×



# STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION - REGION ONE 328 STATE STREET SCHENECTADY, NEW YORK 12305 www.nysdot.gov

MARY E. IVEY REGIONAL DIRECTOR STANLEY GEE ACTING COMMISSIONER

CASE# 1090278

December 22, 2010

Mr. Mike Greenberg 11 Bittersweet Lane Slingerlands, New York 12159

Re:

Traffic Signal Operational Review

Albany Shaker Road @ Old Wolf Road, Signal #104

Town of Colonie, Albany County

Dear Mr. Greenberg:

This letter is in response to your December 7, 2009 message to NYSDOT.gov in which you express concern for the operation of the traffic signal at the intersection of Route 155 (Old Wolf Road) and Albany-Shaker Road in the Town of Colonie. Your message stated that the stop bar for westbound vehicles on Albany-Shaker Road is pushed into the intersection, which makes it difficult for southbound left turning vehicles on Old Wolf Road to perform their turning maneuver. You suggested the stop bar on Albany-Shaker Road be moved back.

We have completed our study of the intersection. Our investigation included observing the flow of traffic through the area during peak traffic periods, and reviewing the accident records for the intersection. The accident study did not identify a pattern of accidents related to the position of the stop bar, and our observations did not identify any operational issues. Our observations and the data collected during this study do not justify any changes to the stop bar at this time. The dotted 'skip marks' that separate the two southbound left turn lanes were observed to be faded during our field work. These dotted lines delineate the turn lanes and identify the desired turning path for left turning vehicles. A work order was issued in September to re-apply these markings. The work was completed in October.

If you have any questions, please contact Rob Fitch of this office at 388-0380.

Sincerely,

Mark Kennedy

Regional Traffic Engineer

(12/8/2909) Mark Pyskadlo - Re: NYSDOT COMMENT, Albany Shaker Road @ Old Wolf & I-87 Exit 4 SB on ramp, Signal Palgot, 1/ CASE # 1090278

RESPONSE DUE By 3/8/10 ROB

From:

Mark Pyskadlo

To: Date: mikeyg512@gmail.com 12/8/2009 2:27 PM

Subject:

Re: NYSDOT COMMENT, Albany Shaker Road @ Old Wolf & I-87 Exit 4 SB on ramp,

Signal #104, Albany County

Dear Mr. Greenberg:

We will initiate a study of the intersection in response to your concern and respond back to you with the results. It will take approximately 90 days to complete the study.

Sincerely,

Mark A. Pyskadlo, P.E.
Traffic Engineering & Safety
NYSDOT - Region One
328 State Street - 4th Floor
Schenectady, NY 12305
(518) 388-0380, Fax: (518) 388-0379
MPYSKADLO@DOT.STATE.NY.US

>>> no-reply@dot.state.ny.us 12/7/2009 11:21 AM >>> The following data was entered at NYSDOT.gov

Name - Mike Greenberg Address - 11 Bittersweet Lane Slingerlands, NY Email Address - <u>mikeyq512@qmail.com</u> Comment Topic - NYSDOT COMMENT - Highways/Roads Question or Comment -

I was turning onto Albany-Shaker Road from Wolf road in order to access the I-87 Southbound ramp. While waiting at the traffic light at Albany-Shaker road and 155 in the left turning lane that would lead me onto the ramp, I notice that the turning lane is pretty far up such that cars turning left from 155 onto Albany-Shaker Road towards wolf road have to use high caution when making that turn so they don't dip the lead car waiting to turn onto I 87. I am wondering if someone could take a look at this and perhaps back up that stop line so that it gives the people turning from 155 onto Albany-Shaker Road more room to turn. Thank you for your time! Page Accessed From:

ACCIDENT DIAGRAM
& OBSERVE

& OBSERVE

- HDM Chapter 5

- throat width 8-9 m

- turning radii

ASR OLD WOLF RD

# ACCIDENT SUMMARY SHEET

| MUNICIPALITY Town of Colonie           | COUNTY Albany                         |
|--|---------------------------------------|
| LOCATION ACRONTEISI @ ACRONTE 153      | (THRM 3047) HSI # 1-1-0495            |
| TIME PERIOD 1/1/07 + 12/31/09          | NO.OF MONTHS 36                       |
|  |                                       |
| Accident Type No. of Accidents         | Pavement No. of Accidents             |
| Right Angle $\frac{3}{11}$             | Dry Wet                               |
| Rear End Overtaking                    | Wet                                   |
| Overtaking   1   5   Sideswipe/Head-on | 2.1                                   |
| Right Turn Parked Vehicle              | TOTAL <u>L</u>                        |
| Pedestrian                             | Weather No. of Accidents              |
| Bicycle Animal                         | Clear                                 |
| Fixed Object                           | Cloudy S 2                            |
| w/Guide Rail                           | Snow<br>Sleet                         |
| w/Sign Posts<br>w/Trees                | Fog                                   |
| w/Ditch-Embank.                        | -                                     |
|  | TOTAL 21                              |
| TOTAL 21                               | , , , , , , , , , , , , , , , , , , , |
|  |                                       |
| Light Conditions No. of Accidents      | Accident Severity No. of Accidents    |
|  | Estal                                 |
| Day Night Unknown                      | Injury 3                              |
|  | Injury Property Damage  TOTAL  21     |
| TOTAL 21                               | TOTAL                                 |

# DEPARTMENT OF TRANSPORTATION TRAFFIC ENGINEERING AND SAFETY DIVISION

Sheet 1 of 3.

COLLISION DIAGRAM 3 Municipality TOWN OF COUNTY ALBANY
Intersection ALBANY SHAKER RE(N.4.155) DOD DOF FD [I-37 FAZ
Period Years Months From 1/107 12/34/09 File D.M.U. By D.7.W. Date 1/13/10 ONY land in a Sideswipe due to an icy skil a accident report. OF SYMBOLS →<del><...</del> Rear-end — Head-on ← - Pedestrain ← Moving Vehicle Side-swipe ← B -Bicycle ← M-Motorcycle Left-turn Out of control □ Fixed Object ←→→> Backing Vehicle Skidding O Personal Injury ← Stopped Vehicle Right-angle Overturned Parked Vehicle Fatal Injury

S (€ 04

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

SHEET \_\_\_OF \_\_

THE CHESS, U.Z. STANKET, THEN STOPPED WIS UP STANKE BOTH UPH 8. F. ON OLD WELFRD. VI START FOR SKANKED AS. R. BOSIGNAL VI DID DOT. VI STRUCT VATPUSHED VAIND VS. (RE. BOTH VEH. S.D. OD OD GOOF RD. WELTIL, VI IN CONTER ITAL BOTH UEH. E.F. O. A. S.R. I'M KIT, BOTH TURNING ONTO I BIT KINE STOWEDS SLEWEL, WITCH USK יט ניס STATE OF THE STATE 7 BAH VICH. S. B. O.D OLD WOLFRD, VISBILARES FIN VIEBODASK. NZWB. VQ TURNED IT. 150 VITO IT-8 BOTH LEH EIR. D. A.S.K. VI STOPPED TOO PONT , VADIO DE 11 TOLINGO LT. 110 1/2/02-1811 イギ 1/18,6,6) OLD WOLF PP. 1/65 5 W.B. OJ 4.5.R. IN LIFE. BOHIND UPINEWED "O SIGNAL. 1/1 THIND LT. + FISH MILED INTO VIANZ : 00 11 2.15. 95 OLD WOLF. 10. , UB. W. F. Q. A. J. R. , VI KAD SINJA, 12 con to war two to M. BOTH VEH. S. B. OLD OLD WOLF PO. VASIONIED, VI DID NOT THE 3 VEH. 3. B. ON OLD WELFIED, IN RT.L. VRYS BOT VI SID INDVZ POSHING VRINDUS. BOTH UELL SE OF OLD WALFIED. VELOTORIED IN TRAFFIED. BULDED "BY SWING DION'T KNEW VE SENIOW. Steet/Hail/Freezing Rain Fog/Smog/Smoke Other VID. B. O. A.SK., VR EIB. VI TURES IT IFO VQ ID ALL 3 1641. 9, 8. 00 OLD LOUF RD. VR+SSIOTHED FOR 20601 J 780 WEATHER Cloudy Snow CASE NO. DATE - 444466 FILE DESCRIPTION Snow/Ice Slush Other AT INTERSECTION WITH/OR BETWEEN

OLD WOLF (D. (M.Y. 155) \$ I 875.B. BY RIMP. CONDITION 11 STOPPED WOO WARNING, IN TUKEN, 30T UCH. S.13. ON OCO WOLF 10-1. Dry 4. 2. Wet 5. 3. Muddy 10. MARGA ASK, VAEB. Use Codes from MV 104 Police Report see back of this form for codes A STANT STAKER RD (N.Y. 155 ROADWAY CHARACTER
1. Straight and Level
2. Straight and Grade Straight at Hillcrest
Curve and Level
Curve and Grade
Curve at Hillcrest VADIDASI 1 1 1 1 1 1 1 1 S ROUTE NO. OR STREET NAME St. RAWP. KANP. Dark Road Lighted . Dark Road Unlighted LIGHT CONDITIONS
1. Daylight
2. Dawn CONTRIBUTING 91%/ APPARENT 1 **FACTORS** 60 18/18 1 ١ 25,71 3,62/ ) Col 7 1 ec **M** B 8 **(1)** ENVIRONMENTAL
Use codes from MV 104
(shown at right) for
these categories B 7 (G) SURFACE CONDITION X J B R YAWGAOR OR IDENT. 7 THOIT 7840 28.T. 2 Fro. 2 180, 12/PED. 600 PEO 2 PT 80 F 512 (e) COLONIE 3 (4)OŁ ON 1.168/401 Σ, Σ 12.50 18.50 7 9:30 2,2 DIL 7.7 4/11/08/0/17 TIME 411. 5136 ひられて 4:30 3:6 8.16 0):2 3 PM. 00 x 6 00 E アインション 131109 (c) 101 415417 1/4/10/1 FROM 10/20/07 124/00 10/11/01 120/02 ☐ VILLAGE OF 15/07 (A) (A) 0(४४)०१ 19/61 121/02 8/18/01 10/01 TIME PERIOD DATE 0 DIAGRAM NO. **区**fown COUNTY CITY NUMBER MONTHS 3 Z T M) J 2 60 9 5 Θ 7 0

TE 213 (9/79)

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

Q.

. 7355FA NO. 1/88. a) OLD WOLF PD., PLEPAKING TO TO AND RECORD AND. BOOM WEAK. MAKING AS. POLIN FLOM ASK. E.B. GNOD I-81 S.I. KAMP. VI STOPPED WHAT OP & CHECKING AMORKHING PLAFFE MWB.O. L.S.R., VZ.E.B. VITURED CT. TO I-BT KAMP MEDIO CIB K-87 1090278 Siest/Hail/Freezing Rain Fog/Smog/Smoke Other 11 TOKNED 100 8000 + STRUCK CURTY AT SIGN ON BOTH UEH, E.B. ON 4.5.K. IN KTIL FOR PRANI SHEET ンズス えんべ 1 3/10 WEATHER Cloudy Cloudy Rain Snow CASE NO. DLD CLB CH KAKO (N.Y. 155) & I BY & I BY BY -44.44.60 FILE HOADWAY SURFACE
CONDITION
1. Dry
4. Snow/ice
2. Wet
3. Muddy 10. Other DESCRIPTION 14.5K, 12 EIB. ALEANY SHAKER ROND. (N.Y. 155 TOPI OKTITUDENS Use Codes from MV 104 Police Report see back of this form for codes ROADWAY CHARACTER
1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Horset
6. Curve at Hillcrest 11 10 14 19 15 ROUTE NO. OR STREET NAME 1/w.B.a dret. Dusk Dark Road Lighted Dark Road Unlightud LIGHT CONDITIONS:
1. Daylight
3. Dawn
3. Dusk
4. Dark Road Lighted
6. Dark Road Unlighted APPARENT CONTRIBUTING **FACTORS** ) 1 マ〜 7 7 ENVIRONMENTAL
Use codes from MV 104
(shown at right) for
these categories Q <u>\_</u> **MEATHER** ROADWAY SURFACE CONDITION J (e) サ 6 7 OR IDENT CONDITIONS THDI\_ 1 600. ZP.I S Foo 8,000 2 E (P) **SEVERITY** DLONIUS (4)NO' OF VEH. 145 5 % 2, % 6130 Paid Pm. 10:2 TIME 60 R. M. 40042 (<sub>C</sub>) 0// 12/ 60/2/ 12/1/20 CITY VILLAGE OF. FROM 1/2/09 60/11/6 4/1909 TIME PERIOD 2 DATE 0 DIAGRAM NO ID-YOWN COUNTY NUMBER MONTHS 977 8 **a** 9  $\odot$ 

# ACCIDENT SUMMARY SHEET

| MUNICIPALITY Town of Colonie                | COUNTY_   | Albany  |
|---|-----------|---------|
| LOCATION NY 910B; RM 910B-1101-1016 TO 1019 | PIN       | 1721.51 |
| TIME PERIOD 1/1/07 to 3/31/10               | NO.OF MOI | NTHS 39 |
| TIME PERIOD 1115                            |           |         |

| Accident Type  | No. | of Acc                                | idents       |                                       | Pavement  |       | No. | of Ac              | <u>cidents</u> |
|--|-----|---------------------------------------|--------------|---------------------------------------|---|-------|-----|--------------------|----------------|
| Right Angle Rear End Overtaking Left Turn  | ·   | 17<br>- 6<br>- 14<br>- 34             |              |                                       | Dry<br>Wet<br>Snow/Ice<br>Unknown                 |       |     | 97<br>25<br>5<br>5 | (20% of known  |
| Sideswipe/Head-on<br>Right Turn<br>Parked Vehicle                                      |     |                                       |              |                                       |   | TOTAL |     | 132                |                |
| Pedestrian<br>Bicycle  | Pa  | · · · · · · · · · · · · · · · · · · · | a delete que | · · · · · · · · · · · · · · · · · · · | Weather<br>Clear                                  | ~     | No. | of Ac              | cidents        |
| Animal Fixed Object w/Utility Pole w/Guide Rail w/Sign Posts w/Trees w/Ditch-Embank w/ |     |                                       |              |                                       | Cloudy<br>Rain<br>Snow<br>Sleet<br>Fog<br>Unknown |       |     | 46<br>9<br>3<br>   |                |
| ·  |     | 170                                   |              |                                       |   | TOTAL |     | 170                |                |
| TOTAL  |     | 156                                   |              |                                       |   |       |     |                    |                |

| Light Conditions        | No. of Accidents | Accident Severity                  | No. of Accidents |
|-------------------------|------------------|------------------------------------|------------------|
| Day<br>Night<br>Unknown | 85<br>46<br>1    | Fatal<br>Injury<br>Property Damage | <u>52</u><br>80  |
| TOTA                    | 132              | TOTAL                              | 132              |

# NYSDOT Safety Information Management System Accident Severity Summary

Intersection & Non-Intersection Accidents

Complete Accident Data From NYSDMV Is Only Available thru 30-SEP-2010

Route: 910B

Highway Location Ref Mrkr Range: 910B11011016 - 910B11011019

Dates: 01-JAN-2007

thru 31-MAR-2010

Traffic Volume: 29,180

Date: 02/14/11 14:32

| Total of<br>Fatal Accd | Total of<br>Injury Accd | Total of PDO Accd | Total of<br>Non-Reportable | Total Number of Accidents | Accident<br>Rate |
|------------------------|-------------------------|-------------------|----------------------------|---------------------------|------------------|
| 0                      | 59                      | 61                | 11                         | 131                       | 9.46             |

Accident rate for linear section is accidents per million vehicle miles.

NYSDOT Safety Information Management System Summary Report By Segment And/Or Intersection Intersection & Non-Intersection Accidents

Page: 1

Date: 02/14/11 14:33

Complete Accident Data From NYSDMV/Is Only Available thru 30-SEP-2010

|                   | Z H   | 0                 |                | Ŋ              | 2              | S              | 2                  | 0              | 23                      | 38                       |
|-------------------|---|-------------------|----------------|----------------|----------------|----------------|--------------------|----------------|-------------------------|--------------------------|
|                   | TRUCK LIGHT CONDITION *** DWN/DSK DAY NIGHT ** ** ** ** | m                 | _              | r)             |                | 10             | Ŋ                  |                | 55                      | 81                       |
|                   | TGHT CO   | , <del>-</del> -1 | -4             | 0              | p              | 0              | 7                  | 0              | 2                       | ~                        |
| 10                | RUCK LIGHT COND *** DWN/DSK DAY *** ** **               | 0                 | 0              | 0              | 0              | 0              | -                  | 0              | 7                       | ю                        |
| 31-MAR-2010       | S PED& TRUBIKE **                                       | 0                 | 0              | 0              | 0              | 0              | 0                  | 0              | 0                       | 0                        |
| - 31-             | CIDENTS FIXED PHOBJ B1                                  | 0                 | 0              | 0              | r-4            | 0              | 0                  | 0              | 0                       | н                        |
| 2007              | OF ACCI WET FI ROAD O                                   | 7                 | 0              | 1              | 7              | m              | 7                  | 0              | 15                      | 25                       |
| 01-JAN-2007       | NUMBER OF ACCIDENTS N/R WET FIXED P ROAD OBJ B ** **    | 0                 | 0              | m              | 0              | m              | κ                  | 0              | 4                       |                          |
|                   | 1   | H                 |                | 5              | m              | 7              | 2                  | Н              | 41                      | 61                       |
| DATES:            | PDO   |                   |                |                |                |                |                    |                |                         |                          |
| No. 1 4 70        | DNI   | m                 | 2              | 4              | H              | 9              | 4                  | 0              | 39                      | 5.9                      |
| 11019             | FTL   | 0                 | 0              | 0              | 0              | 0              | 0                  | 0              | 0                       | 0                        |
| 910B11011019      | TOTAL   | 4                 | т              | 10             | 4              | 16             | 9                  | <b>r</b> →     | 84                      | 131                      |
| ı                 |   |                   |                |                |                |                |                    |                | щ                       |                          |
| 910B11011016      |   |                   |                |                |                |                | EXIT 4             |                | RAMP TO I87 NB          | ES 999 RMS               |
| HIGHWAY LOCATION: | DESCRIPTION   |                   | MARCUS BLVD    |                | ULENSKIE DR    |                | RAMP FROM 187 NB - |                | ALBANY SHAKER RD & RAMP | ROUTE TOTAL EXCLUDES 999 |
|                   | N<br>H<br>H   |                   | 45             |                | 40             |                | 41                 |                | 42                      |                          |
| ROUTE: 910B       | REFERENCE   | 910B 1101 1016    | 910B 1101 1016 | 910B 1101 1017 | 910B 1101 1017 | 910B 110I 1018 | 910B 1101 1018     | 910B 1101 1019 | 910B 1101 1019          |                          |

TE 56 (4/69) ·

# DEPARTMENT OF TRANSPORTATION TRAFFIC ENGINEERING AND SAFETY DIVISION

COLLISION DIAGRAM

1080 248

| Municipality Zo | and Colonie   | CountyAlsa          | File      |              |
|-----------------|---------------|---------------------|-----------|--------------|
| Intersection    | 10/4/62 E 0/e | 00 1/1/05 To 9/28/0 | 1-1017    | m Date 10/2/ |
|                 |               | Pock wall           | Vlanski D |              |
|                 |               |                     |           |              |
|                 | 1             |                     |           |              |

| SYMB                                      | OLS                             | MANNER C                  | OF COLLISION                          |
|---|---------------------------------|---------------------------|---------------------------------------|
| ← Moving Vehicle                          | ← — Pedestrain                  | Rear-end                  | ───────────────────────────────────── |
| ← M — Motorcycle<br>←→>>> Backing Vehicle | ← B —Bicycle □ Fixed Object     | Side-swipe Out of control | Left-turn                             |
| Stopped Vehicle  Parked Vehicle           | O Personal Injury  Fatal Injury | Skidding Overturned       | Right-angle                           |

TE 213 (9/79)

DIAGRAM NO.

# DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

OF

SHEET

3 1.0 to 13/ driving, 0470801 Commen Snow Steat/Hail/Freezing Rain Fog/Smog/Smoke Other ソサン SALARONIA WEATHER Operator waved out by uninvolved motorist 1, Clear Z CASE NO. N DATE - 26.470.00 FILE ВХ 1057 Crossed Roadwas (11) DESCRIPTION Snow/Ice Slush Other ROADWAY SURFACE
CONDITION
1. Dry 4. Snow/lc.
2. Wet 5. Slush
3. Muddy 10. Other oporator was wared across 71013-1101-1017 Traffic Use Codes from MV 104 Police Report see back of this form for codes pared ROADWAY CHARACTER AT INTERSECTION WITH/OR BETWEEN Straight and Level Straight and Grade Straight at Hillcrest Curve and Level Curve and Grade In attention Curve at Hillcrest ろをなる ROUTE NO. OR STREET NAME Pedestino 11,5101 アンロンア Daylight
Dawn
Dusk
Dark Road Lighted
Dark Road Unlighted LIGHT CONDITIONS
1. Daylight
2. Dawn (10) Use APPARENT CONTRIBUTING lensk, **FACTORS** 0 J 0 Ĩ J I N N ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories N M (G) **МЕ**РТНЕВ M N ٨ CONDITION N N SURFACE  $\otimes$ N N N CHARACTER OR IDENT. t I CONDITIONS I 20012 LIGHT 00 7 4 47 2 ROS 11Bo 18/07 8 Pm 2 PEO Ê 7 3/29/06 1 PM 2 PDG 4 gm 3 800 4 SEVERITY Co loniè Ŋ N 36 Z 19 mg p (4)NO. OF VEH. 500 30 % Am r de 10 m 200 3/20/66 16 pm TIME (36) 89 (m) 12/23/05/12 Ž 11/26/07 40 4/17/07 7/1/66 9/23/07 11/27/07 FROM 30/6/8 UVILLAGE OF 4 TIME PERIOD 70/4/6 DATE 12/21 Š FTOWN CITY COUNTY NUMBER MONTHS 0 1  $\omega$ 9 3 T  $\subseteq$ S

# ACCIDENT SUMMARY SHEET

| MUNICIPALITY Town of Colonie |           | COUNTY Albany   |
|------------------------------|-----------|-----------------|
| LOCATION AC Route 153/01     | d Wolf Rd | PIN 1721.51     |
| TIME PERIOD 1/1/07 TO 3/31   | 110       | NO.OF MONTHS 39 |

| Accident Type No. of Accidents                                   | Pavement                          | No. of Accidents                              |
|--|-----------------------------------|---|
| Right Angle  Rear End  Overtaking  Left Turn  Right Angle  72  8 | Dry<br>Wet<br>Snow/Ice<br>Unknown | 7<br>1<br>2                                   |
| Sideswipe/Head-onRight Turn                                      | TOTAL                             | 30  |
| Parked Vehicle Backing 1   |                                   |   |
| Pedestrian   |                                   | _   |
| Bicycle 1  | Weather                           | No. of Accidents                              |
| Animal   | Clear                             | - Ly many and                                 |
| Fixed Object   | Cloudy                            |   |
| w/Utility Poles-Wars   | Rain                              | 2   |
| w/Guide Rail   | Snow                              | APRIL 100-100-100-100-100-100-100-100-100-100 |
| w/Sign Posts   | Sleet                             |   |
| w/Trees  | Fog                               |   |
| w/Ditch-Embank.  | Unknown                           | 2_  |
| w/   |                                   | <b>7</b> 0                                    |
| - ·  | TOTAL                             | 30  |
| TOTAL 30   |                                   | <del></del>                                   |

| Light Conditions        | No. of Accidents | Accident Severity                  | No. of Accidents |
|-------------------------|------------------|------------------------------------|------------------|
| Day<br>Night<br>Unknown | 22<br>7<br>1     | Fatal<br>Injury<br>Property Damage | 0 13             |
| TOTAI                   | 30               | TOTAL                              | 30               |

NONE TE 213 (9/79)

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

N OF SHEET

26 V2 THE ST SLOWING STANAL SLOWING SIGNED へて ゆく ころ シンライン TOF IN TRAFFIC AT SIGNAL 7 SIZNET 7.7 38 孟 4 TENTER! Rain Snow Sleat/Hail/Freezing Rain Fog/Smog/Smoke Other 28 S 70 MCK クグア STUCKED NO STEURK F  $\sqrt{}$ 3 加 90 TRAFFIL GND-WB, HEAVY TRAFFIC ON RAMP TRAFFIC STRUCK HEMY TRAFFIC ON RAMP WEATHER STRUCK STEURCK EB MILITA 9 Clear Bull MILLER, ILIT II I CHITCHON TONECIS OR 00 V-1 CHANGED LANES CASE NO. STUPPED FOR TRAFFIC TRAFFIC DATE FILE TRAFFIC -. 44469 ATTEMÍTICO LICTA TOARN STOPPED IN TWAN STURRED STRUCK Snow/Ice Slush Other NB V-1 ATTEMPTED LEFT TWEN DESCRIPTION STUPPED SURFACE ENTERED STURCE V-1 ENTERED S. V-1 ENTERED 出出 4. % 0. JIM) N ROADWAY SI 305 1-1 Dry Wet Muddy 5 Dump WP 7-7 <u>-</u> NB V-1 ATTREMPTED Use Codes from MV 104 Police Report see back of this form for codes 0 > GND-WB NB V-1 BACKED. WB JUMPRTAKE-SB 38 HOADWAY CHARACTER

1. Straight and Level

2. Straight and Grade

3. Straight at Hillcrest ANGLE 8h08 Bany County Route 153 AT INTERSECTION WITH/OR BETWEEN ANCIE GND-CNE D N D GND- ) 3. Straight at Hillcres
4. Curve and Level
5. Curve and Grade
6. Curve at Hillcrest  $\geq$ <u>S</u> 1 2 2 2 ROUTE NO. OR STREET NAME RCAR RIGHT REAR REPR REAR REPR REM THRM 159-1101 3,018 2000 ΣZ 3,025 Dusk Dark Road Lighted Dark Road Unlight್ಯದ LIGHT CONDITIONS
I. Daylight
Dawn APPARENT CONTRIBUTING **FACTORS** 22 H 217 \_\_ 7 <u>U</u> 2 4 Q 7 Q Q 1 \_\_\_\_ 4. 10. 5112111 N N ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories 0 S <u></u> **MEATHER** CONDITION 7 1 <u>⊚</u> SURFACE فس 4 コニンタフタンコーのちょう 部中語 (<u>o</u>) CONDITIONS PILI PDO P-7 900 1800 00/ 000 21800 7 (c) **SEVERITY** 6 Sait 2 (-) ( (4)NO' OF VEH. ~ Jossih I 10 MSA RIOZA 5326 9139 h 1450 4:17 L V 19118# 5131F JOI! h 9 TIME 2118 10/ 2 7:II (c) Bany 6 FROM (A) 5 P 50 19 0 5 5 10 5 13 6 TIME PERIOD CITY
VILLAGE O DATE 20 vi 2 I (0) 36 V 3 三 0 Ū DIAGRAM NO.  $\omega$ ☐ TOWN 0 0 0 0 COUNTY NUMBER MONTHS OF 3 9 J (U)9  $\infty$  $(\!-\!)$ 0

TE 213 (9/79)
DIAGRAM NO. NONE

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

SHEET 2 OF 2

| ROUTE NO. OR TREET NAME |              | 1155-1101-3048 TO 3052 DATE | S ROADWAY CHARACTER ROADWAY SURFACE WEATHER 1. Straight and Level CONDITION 1. Clear 2. Straight and Level 1. Dry 4. Snow/ice 2. Cloudy 3. Straight at Hillcrest 2. Wat 5. Slush 3. Rain 4. Curve and Level 3. Muddy 10. Other 4. Snow | 6. Curve at Hillcrest John MV 104 Police Report | sae back of this form for codes    TH | SONS RIGHT ANGLE, V-1 ENTERED TRAFFIC EB, STRUCK BY SB V-2 | Soys NB V-1 ATTEMPTED LEPT TURN, STRUCK BY SB V-Z | GOYA REAR END-SB, V-2 STOPPED IN TRAFFIC | 9050 REAR END-WE, V-2 SCOWING IN TRAFFIC AT SIGNAL | BOSO REPAR END- WB, V-1 STARTING IN TRAFFIC AT SIGNAR | JUNG NO V2 ATTEMPTED LEFT THAN, STRUM BY SB V-1 | SMS NO V-1 HTTEMPTED LEFT THEN, STRUCK BY SG V2 | SHIR NO VI ATTEMPTED LEFT THIRM, STTRUCK BY SB V-2 | BORNO VY ATTEMPRED LEFT THEN STRUCK SBV2 | GOSO KERR END-SB, V-2 STORED AT RED TRAFFIC SILVAL   | 350 REAR END-WB, V-2 SCOWING IN TRAPPIC AT STAIRL | 3050 PEAR END-36, BOTH VEHS PULLING TO SHULLDER EMEGA. | 301 RIGHT ANGLE, VI ENTERED TRAFFIC EB, STRUCK BYSBYB | 3048 V.1 STUPPED IN TRAFFIC SB, SB BICYCLIST HAD SIEZURE |         | - deadle |
|-------------------------|--------------|-----------------------------|--|---|---------------------------------------|--|---|--|--|---|---|---|--|--|--|---|--|---|--|---------|----------|
| -                       |              | A IN ERSECT                 | LIGHT CONDITIONS 1. Daylight 2. Dawn 3. Dusk 4. Dark Road Lighted  | Dark Hoad Un                                    | APPARENT<br>CONTRIBUTING<br>FACTORS   | 50   |   | b'h                                      | 9,4  | ) <u>/</u> )  | 13,17   |   |  |  | Same of the same o | 1   | F92  |   | 10   |         |          |
| 151                     | >   .<br>-   |                             |  | _   | ЭНТАЭМ                                |  | Seguero (Marie) (Marie)                           | 7  |  | 3   |   | · ·   | and the same                                       |  |  | 7   |  |   | 3  |         |          |
| 177777                  | _            |                             | ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories  | ω) =  | AOADWA<br>SURFACE<br>ITIGNOD          |  |   |  |  | 7   |   | and the second                                  |  |  |  | 7   |  |   | 7  |         |          |
| _                       |              |                             | Codes from at right  | Уяэт  | СНАВАС.<br>ОВВ                        | , marine   |   |  |  |   |   | And the second second                           | and the state of                                   |  |  |   |  |   |  |         |          |
| P.I.N                   | DENT         |                             | EN.<br>(shoo   | <u></u> емс                                     | LIGHT                                 |  |   | 3  |  |   |   |   | *******  | 7  |  | 23  |  | ·   |  |         | <u></u>  |
|                         | #<br>8       | $\tilde{\sigma}$            | (  | <u>،</u> و                                      | тіяауаѕ                               | S  | 1000  | 900                                      | 008  | 600   | E   | 8   | 1 P D0   | PDO                                      | 600  | P.I   | 1 100  | ppo   | 100  |         |          |
|                         |              | Imre                        |  | і<br>4. ( <del>4</del>                          | NO. OF V                              |  | 7 2   | 7 9                                      | 7 1  |   |   | (C)   | 7 3  | 7  | P 2  | P 2   | A 12   | 2 8   | 9(   |         |          |
| 11600                   | Aug          | 3                           | 107  | 01/   | O TIME                                | A 1039   | 112:31  | SILL                                     | 8:06A  | d hach  | 5:29P   | S.23.f  | 121569   | 5:30 P                                   | 4:50P  | JSZ:9   | A25:01   | 61371   | 212 or   | *       |          |
|                         |              | CITY VILLAGE OF             | R FROM   | 5/3   | ©<br>DATE                             | 89 82 15   | 80,011  | 80 LI                                    | 80/08/14   | 80 11 8   | 1 24 NS   | 6/25/09   | 60/2/6   | 60 91 21                                 | 5/31/09  | 8 29 09   | 60 h/b   | 50 0 1 17   | 01/22/8  |         |          |
|                         | COUNTY STOWN | O CITY                      | TIME<br>NUMBER<br>OF   | 2 0   | © 2                                   |  | ندين ا  | 5 <u>T</u>                               |  | end.  | 6   | 8   |  | \(\sigma\)                               | <u> </u>   | 77  | 87   | 57  | 30   |         |          |
| ، L                     |              |                             | 1 -  | <u> </u>  |                                       | 1  | L   | L  | L  | L   |   | <u>L.</u>                                       | <u></u>  | <u></u>                                  | I  | <b>L</b>  | <u> </u>   | L   |  | <u></u> | <b></b>  |

# ACCIDENT SUMMARY SHEET

| MUNICIPALITY Town of Colmie   | COUNTY Albany   |
|-------------------------------|-----------------|
|                               | PIN 1721. SI    |
| TIME PERIOD 1/1/07 to 3/31/10 | NO.OF MONTHS 39 |

| Accident Type No.  | of Accidents        | Pavement                                   | No. of Accidents                       |
|--|---------------------|--|--|
| Right Angle<br>Rear End<br>Overtaking<br>Left Turn   | 8<br>23<br>10<br>11 | Dry<br>Wet<br>Snow/Ice<br>Unknown          | 38<br>12 (23% of kn.)<br>2 (4% of kn.) |
| Sideswipe/Head-on<br>Right Turn  |                     | TOTAL                                      | <u>55</u>                              |
| Parked Vehicle Pedestrian Bicycle Animal Fixed Object w/Utility Poles w/Guide Rail w/Sign Posts w/Trees w/Ditch-Embank. w/ | 2                   | Weather Cloudy Rain Snow Sleet Fog Unknown | No. of Accidents  30 12 7 3 3 3 L 55   |
| TOTAL  | <u>55</u>           |  |  |

| Light Conditio          | ns N | o. of Accidents | Accident                    | Severity | No. of Accidents |
|-------------------------|------|-----------------|-----------------------------|----------|------------------|
| Day<br>Night<br>Unknown |      | 42<br>12<br>1   | Fatal<br>Injury<br>Property | Damage   | 21<br>34         |
| TO                      | OTAL | <u>55</u>       |                             | TOTAL    | <u>55</u>        |

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM) NONE

TE 213 (9/79)

7 PF SHEET

STRUCK WB VG SISE STORY V. できる SIZER A STANT NAND STRUCK SI Snow Sleat/Hail/Freezing Rain Fog/Smog/Smoke Other いなどろう SIGNE The 4 SED SED グルルでは # 777 ピガイギット アグス に出土 4115 1 99 TRAFFIC PICHT. V-1 PASSED RED SIGNAL. -WEATHER STOUCK 99 W SLOWING -N - ANES TEAFFIC AT STRUCK Clear Cloudy Rain WE VI AT TE MOTED LEFT AGAINST STANK BUTH VEHICLES WAKING TREPET. CASE NO. M TRAFIL 3 CALLABILIC LEX MAKE DATE FILE -44466 STANGE CHANGED 7 MIMOTS 14 ATTEMPTED 18FOT TURN DESCRIPTION - NARN 四子 Snow/Ice Slush Other STERES とでする 2 M COSSILS SURFACE STUPPED コトのの MAKING SCOWING MONTHREAD-FB N-1 SLOWING STARPED ROADWAY SUR CONDITION 1. Dry 4. S 2. Wet 5. S 3. Muddy 10. ( 岛 一万万一 1-/ Care > HI TEMPLED > Use Codes from MV 104 Police Report ATTR MPTED 1-> SB 9 - NB 28 ROADWAY CHARACTER
1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Grade
6. Curve at Hillcrest 3038 58 95 EB 12 AT INTERSECTION WITH/OR BETWEEN REPREDIO SB, RIGHT ANGLE 8 CHO CND. ANGUE END. MERCHAKE MER TAKE RESERVENTO. REAL GNO-County Kout RM 155-1101-5 SHO. I) ROUTE NO. OR STREET NAME NEAR PERR PLOFF PLOFF WR <u>≥</u> APPARENT CONTRIBUTING THE Sent L 13/11/1 3646 202 Daylight
Dawn
Dawn
Dusk
Bosk
Dark Road Lighted
Dark Road Unlighted LIGHT CONDITIONS Albany 1 <u>\_\_\_</u> 2 20 3 コ 00 5 5 2 0 4, rč 1712115 4 ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories N (4) C1 7 (G) 4 **ЯЗНТАЗW** SURFACE **⊚** CHARACTER YAWGAOR OR-LDENT. CONDITIONS LIGHT \_\_\_\_\_ (4) P.I.Z <u></u> 800 000 7 000 100-000 W 100 P0 0 (D) **SEVERITY** 077 170 Ū 3 ζ-(4)C ~5 OE ~ 'ON Proid 9:12 2:37P 9021h S:36P 12:40 4000 SINP J.Y. IA 7000 ----9:30A 3.168 18 TIME 2 イママス T 34 2 (c) 2 CITY FROM 120 07 0 107 50 5 1000 C 0 5 1707 TIME PERIOD 07 DATE (P) 92 5 اندم 0 0 = DIAGRAM NO. 0 0 0 V IN TOWN 3 COUNTY NUMBER MONTHS J N Θ 9 90 5

NONE TE 213 (9/79)

DIAGRAM NO.

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

1

b

OF

SHEET

FRUM VIENING LOT 150 WBV.2 TRAFFIC EB 1-2 5 -WB. V-1 CHANGED LANES TO AVOID UNHIVOLVED VEH 70 5 トスをたり 0 7-7 HEAD Snow Sleet/Hail/Freezing Rain Fog/Smog/Smoke Other HE PAIN 6 STORK STRUCK 2/22/ イルン Du Z <u></u> CK 93 93 - Second NAKE TRAFFIC WEATHER 当りもよう STREED S BUTH VEHICLES SLOWING Clear Cloudy Rain LAND ENTERED TERFELL 116 CASE NO. ができ V-1 ENTERED TRAFFIC NO V-1 CHANGED LANES V-1 CHANGED LANES STENCK STENCK WB V-1 ATTEMPTED LEFT THRN, STRUCK DATE FILE -. 44.4.6.6.0 STUPPED IN STOPPED TMAN (1) DESCRIPTION Snow/Ice Slush Other V-1 CHANGED AND V-3 CHANGED ROADWAY SURFACE CONDITION SB 3071+ SELECTIVE. Albany-Shalen Rd 1. Dry 4. 2. Wet 5. 3. Muddy 10. F. Called 一個一個 THEN 155- 1101-3038 TO Use Codes from MV 104 Police Report sue back of this form for codes > - X B AVERTAKE - W'B  $\leq \frac{1}{2}$ ROADWAY CHARACTER

1. Straight and Level
2. Straight at Hillcrest
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Hillcrest
6. Curve at Hillcrest (RUSSED 9 EB. CND × 80 OVERTIME - MB 0 AT INTERSECTION WITH/OR BETWEEN BIDING THEID ANCHE J -OND GND-CND NUCLTHE-MERTINE MINON I.IN NEZETAKE ROUTE NO. OR TREET NAME REAL DEPAR KERK REPR RIGHT \_ い 9 3,0,40 280 20K 3016 3 3 29MP 30% ξ LIGHT CONDITIONS

1. Daylight

3. Dawn

3. Dusk

4. Dark Road Lighted

5. Dark Road Unlighted AC Rost APPARENT CONTRIBUTING 69.11 **FACTORS** 97 S ذــ 2 7.5 7 . 5 N 11211211 ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories 3 6 3 سید غمد -**MEATHER** D 7 7 <u>@</u> SURFACE RHARACTER \_ YAWQAOR OB LDENT ســ لــــ CONDITIONS (G) TH91-Tida 00 d , |----PDO 600 90 Ulilling orcum 2 Ban 100 100 (D) المسا **SEVERITY** SIE 7 1 N S NO' OF VEH, Car <--; 12:21 9:19 14:VTP Sie 9:17A 5367 0 1 1 1 1 145 A 4:26 0412 4:190 2.08P I TIME 10, S 0//2 7.451 <u>ල</u> (Dany Ď TOWN □ CITY □ VILLAGE OF \_ FROM 89 22 <u>د</u> = 200 600 600 760 760 8. 200 00 90 00 02 80/61/21 89 TIME PERIOD --St  $\sim$ 0 DATE (P) 2 1 8 9 \_\_ 52  $\subseteq$ ~ 7 2 V 5.... COUNTY J N NUMBER MONTHS P نسم 63 50 S  $\Theta$  $C\Phi$ 2 3 5

TE 213 (9/79)

DIAGRAM NO.

NONE

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

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SIGNED な子をでい 5 . ..... 3 SIANKY OF PARIN CANONINA OWN Snow Sleet/Hail/Freezing Rain Fog/Smog/Smoke Other 7-7 どもは \$ B <--5 2 T 5 4115 MED F TRAFFIC SHEET GLE STIRED 1000 3 して発圧でし 1 30 WEATHER しまなして MENNING CMB/ZEMD STOPPED IN TRAFFIC 到 Clear Cloudy Rain STRUCK SIGNIAL **NAND** できば STRUCK Š. DATE \_ CASE FILE - 76 m 4 m m 0 0 Z -FRIE COMMOD 2 7 (1) DESCRIPTION SLOWING Snow/Ice Slush Other Y-1 MAKING LEFF, STAPPED TURN FF CHANGED AND END 220 ROADWAY SURFACE CONDITION 1. Dry 4. Snow/lo 2. Wet 5. Slush 3. Muddy 10. Other WIR YI ATTERNITED LETT THRM VI STOPPED FOR SCOWING 3047+ V-I CMERNED 3 V-1 STARCTED NINILL VALLED) V-1 ATTEMPTED LEFT 17 Albany - Shaker P 2 -7.7 1 61 ANT 10 C Use Godes from MV 104 Police Report 155-1101-3038 see back of this form for codes (L.6 ENO- WB. - 18 B 2 ا الذي 0 ROADWAY CHARACTER G G 6ND-5B REPAR END-CB 6110-68 AT INTERSECTION WITH/OR BETWEEN لنا Straight and Level
Straight and Grade
Straight at Hillcrest
Curve and Level
Curve and Grade END EB MERCHICE RIGHT ANGLE ONT END-MINICA VICENTA RIGHT ANGLE REAR GIVE MERCTALE SVECTALE. 1721 SI ROUTE NO. OR STREET NAME CER KERK Z PCK PCK KER JOSE REPORT MP 5 3,046 2027 F 50 30.6 Sout 2017 三 左盖 Daylight Dawn Dusk Dusk Road Lighted Dark Road Unlighted KONT LIGHT CONDITIONS APPARENT CONTRIBUTING REV **FACTORS** 5 100 **S**  $\Diamond$ 工 ک بىد بىد 2 5 \_\_\_\_ بسب 0 0 ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories 3 (1) (G) S **МЕАТНЕЯ** 1-7 3 2 4 6-7 **©** SURFACE **ВЕТОАЯАНО** .... لس YAWGAOR OB LDENT. SNOILIGNOS (<u>o</u> 67 -5 LIGHT 6-1 7 00% 7 000 poo NO 1/1 1 / 1/1/1/1 900 007 P 0 0 17 000 (P) **SEVERITY** Mile *(*-1 (4)7 NO' OE NEH' 5 C-- $\subset$ 5 C--17.33 Jahn S 11:78 A dsiih 4:01 1.40P H 1 h: 9 0 18421 5 10.10 A ear of a TIME 10, 50 Thil Ŕ 0 7 (c) Dan 3 TOWN CITY VILLAGE OF FROM 120 05 10108 500 0 0 00 00 5 80 09 صن 09 00 69 TIME PERIOD 0 \_  $\bigcirc$ 0 DATE 2 29 (P) <u>U</u> 7 5 9 00 S G 00 2 سدر قيد T COUNTY NUMBER MONTHS Q 9 0 2 28 2  $\hookrightarrow$ 5 2 Θ  $C_{\ell}$ 3 3 نــ

TE 213 (9/79)

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

SHEET 4 OF 4 DIAGRAM NO. NONE

| COUNTY                         | A                       | ( Bany              |             | P.I.N.<br>OR-IDENT. | P.I.N.<br>FDENT.               |                                |  |         | ROUTE NO. OR TREET NAME  | ET.           | Albany - Shaley RA   |                      | CASE NO.   |             |
|--------------------------------|-------------------------|---------------------|-------------|---------------------|--------------------------------|--------------------------------|--|---------|--|---------------|--|----------------------|--|-------------|
|                                | S IOWN                  | S mic               | <u>v</u>    |                     |                                |                                |  |         | AT INTERSECT   | Ne Y          | 1 +  | S. K.                |  |             |
| TIME<br>NUMBER<br>OF<br>MONTHS | PERIOT<br>FR(           | 1 7                 | 9           | 9                   | ENV<br>Use c<br>(show<br>these | IRONM<br>codes fr<br>wn at rig | ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories  (6) (7) (8) (9) |         | LIGHT CONDITIONS 1. Daylight 2. Dawn 3. Dusk 4. Dark Road Lighted 5. Dark Road Unlighted | 7 - 2 C 4 C C | ROADWAY CHARACTER ROADW 1. Straight and Level CONDIT 2. Straight at Hillcrest 2. Wet 4. Curve and Level 3. Mudd 5. Curve and Grade 6. Curve at Hillcrest | ACE<br>ow/Ice<br>ish | WEATHER 1. Closer 2. Cloudy 3. Rain 4. Snow 5. Sleet/Hail/Freezing Rain  | lain        |
| 5                              | 2/3 <br>  (2)<br>  DATE | 1/10<br>(3)<br>TIME | ио: ое лен: | SEVERITY            | CONDITIONS                     | YAWAA<br>CHARACTER             | YAWDAOR<br>SURFACE<br>CONDITION  | язнтазм | O Use APPARENT CONTRIBUTING FACTORS  | See ba        | odo  | (1) DESCRIPTION      |  |             |
|                                |                         | Hisap               | 2           | 600                 |                                | جددوست <sub>ا</sub>            |  |         |  | , Fg.         | REAR GNO-EB, V-2 STOPPED IN TRAFFIC AT SIGNAL  | STO PRED IN          | ファルル   | 35          |
|                                | 6 29 09                 | 5150P               | Comp        | 000                 |                                |                                |  | 7       | 5  | 3,047         | REAR GNO-EB, 4-2 STARTED THRN STAPPED AT SKAM  | THRETED THREY        | THEN STAPPED   | AT SKNNL    |
|                                | 0.9                     | 8:071               | <i>~</i>    | 000                 | eriginis.<br>Espe              |                                | C  | 2       |  | LEG.          | MY WE Y-I ATTEMPTED LEPT THRAN AT SIGNAL, STRUCE BY GB YZ  | FF TMRN P            | T'S KANAL, STRUC   | C 64 68 V-2 |
|                                | 0/871                   | 9:01A               |             | 93                  |                                |                                | 5  | 7       | 66.  | 20.YE         | EB V-1 SLID ON 1CY PAVEMENT, STRUCK GR   | PAVEMENT             | STRUCK GR  | ,           |
|                                | 2/2/16                  | 6.578               | 7           | p 00                | 7                              | _                              | 7  | 4       |  | 3046          | SOUR RIGHT ANGLE, V-1 ENTERED TEAFFIC NB, STRUCK BY  | ERED TRAFF           | IC NB, STRUCK  | BN EB 11-2  |
|                                | 2 177 10                | 91116               | 7           | 000                 | 5                              |                                |  |         |  | 3046          | 3046 MB V-1 ATTEMPTED LEFT THRN, STEUCK BY WB V-2  | UEFT FURN            | STEUCK BY V  | JB V2       |
|                                | 01/22/10                | 8:53P               | 04          | 900                 | 哥                              |                                |  | _       |  |               | WB VI ATTEMPTED LEFT AT SIGNAL, STRACK BY EB 1-2   | EFT AT SIGN          | UAL, STRINCK P   | Y EB Y-2    |
|                                |                         |                     |             |                     |                                |                                |  |         |  |               |  |                      | ,  |             |
|                                |                         |                     |             |                     |                                |                                |  |         |  | an way so     |  |                      | The state of the s |             |
|                                |                         |                     |             |                     |                                |                                |  |         |  | . /           |  |                      |  |             |
|                                |                         |                     |             |                     |                                |                                |  |         |  |               |  |                      |  |             |
|                                |                         |                     |             |                     |                                |                                |  |         |  |               |  |                      |  |             |
|                                |                         |                     |             |                     |                                |                                |  |         |  |               |  |                      |  |             |
|                                |                         |                     |             |                     |                                |                                |  |         |  | 4-1-1-1       |  |                      |  |             |
|                                |                         |                     |             |                     |                                |                                |  |         |  | 4. Bancos     |  |                      | A CONTRACTOR OF THE PROPERTY O |             |
|                                |                         | <del></del>         |             |                     |                                |                                |  |         |  | . **          |  |                      |  |             |

# NYSDOT Safety Information Management System Accident Severity Summary

# Intersection & Non-Intersection Accidents

Date: 02/14/11 14:32

Complete Accident Data From NYSDMV Is Only Available thru 30-SEP-2010

Route: 910B Highway Location Ref Mrkr Range: 910B11011010 - 910B11011015

Dates: 01-JAN-2007 thru 31-MAR-2010 Traffic Volume: 30,260

| Total of<br>Fatal Accd | Total of Injury Accd | Total of PDO Accd | Total of<br>Non-Reportable | Total Number of Accidents | Accident<br>Rate |
|------------------------|----------------------|-------------------|----------------------------|---------------------------|------------------|
| 0                      | 21                   | 26                | 5                          | 52                        | 2.41             |

Accident rate for linear section is accidents per million vehicle miles.

NYSDOT Safety Information Management System Summary Report By Segment And/Or Intersection

Date: 02/14/11 14:32

Intersection & Non-Intersection Accidents

Complete Accident Data From NYSDMV/Is Only Available thru 30-SEP-2010

\*\*\* DWN/DSK DAY NIGHT FIXED PED& TRUCK LIGHT CONDITION 43 S 0 0 0 0 0 0 0 0 0 0 - 31-MAR-2010 BIKE 0 0 0 NUMBER OF ACCIDENTS -OBJ 0 0 0 0 0 0 0 01-JAN-2007 WET ROAD 14 S 0 0 0 4 N/R DATES: 26 PDO 0 21 INC 910B11011015 0 0 0 0 0 0 FTL TOTAL 51 ı 910B11011010 ROUTE TOTAL EXCLUDES 999 RMS WOLF ROAD SHOPPERS PARK HIGHWAY LOCATION: DESCRIPTION METRO PARK RD COMPUTER DR BELTRONE DR INT. 36 37 900 44 910B 1101 1010 1011 1013 910B 1101 1013 910B 1101 1014 1011 1012 910B 1101 1014 910B 1101 1015 910B 1101 1010 910B REFERENCE 1101 910B 1101 910B 1101 910B 1101 ROUTE: 910B

\*\*\* EXCLUDES PICKUPS & VANS

### ACCIDENT SUMMARY SHEET

| MUNICIPALITY Town of Colonie   |   | COUNTY     | Alba                            | 7                    |
|--|---|------------|---------------------------------|----------------------|
| LOCATION NY 9/0 B; RM 9/08 - 1/01 - 1010   | to 1015   | P:11       | 1721.                           | 51                   |
| TIME PERIOD //1/07 to 3/31/10  |   | NO.OF      | MONTHS                          | 39                   |
|  |   |            |                                 |                      |
| Accident Type No. of Accidents   | Pavement  | 1          | No. of Ac                       | cidents              |
| Right Angle Rear End Overtaking Left Turn Sideswipe/Head-on Right Turn Parked Vehicle                            | Dry<br>Wet<br>Snow/Ice<br>Unknown                                     | TOTAL      | 39<br>14<br>1<br>54             |                      |
| Pedestrian  Bicycle  Animal  Fixed Object  w/Utility Poles  w/Guide Rail  w/Sign Posts  w/Trees  w/Ditch-Embank. | Weather<br>Clear<br>Cloudy<br>Rain<br>Snow<br>Sleet<br>Fog<br>Unknown | · <u>ì</u> | No. of Ac<br>23<br>20<br>9<br>1 | cidents              |
| w/ TOTAL 54  |   | TOTAL      |                                 |                      |
|  |   |            |                                 | č                    |
| Light Conditions No. of Accidents  | Accident  | Severit    | <u>у</u> <u>No. о</u>           | Accidents            |
| Day Night Unknown  | Fatal<br>Injury<br>Property   | Damage     |                                 | <u>0</u><br><u>4</u> |
| TOTAL 54   |   | TOTAL      | 5                               | <u>4</u>             |

HSI # 1-1-0477 , NY 910B, RM 910B-1101-1016 to 1019 Town of Colonie, Albany County

### Problems Identified

NY Route 910B, Wolf Road, was identified as a Priority Investigation Location (PIL) from RM 1016 to 1019 and a Priority Investigation Intersection (PII) at RM 1019 based on reportable accidents during the period 11/1/07 to 10/31/09. NY 910B, which travels north-south, is a four lane divided Urban Principal Arterial highway with free access. The travel way is 54 feet wide, which accommodates four lanes and a paved flush median that provides refuge for turning vehicles. This area is commercially developed with various businesses and driveways on both sides of the roadway. Pavement markings and signing are satisfactory. The posted speed limit is 40 MPH.

Northbound, NY 910B is intersected by Marcus Boulevard from the east at RM 1016 in a T-intersection controlled by a three color traffic signal. NY 910B is intersected by Ulenskie Drive from the east at RM 1017 in a stop controlled T-intersection. NY 910B is intersected at RM 1018 by the I87 NB Exit 4 off ramp from the west in a T-intersection controlled by a 3 color traffic signal. NY 910B is intersected by Albany Shaker Road at RM 1019 in an intersection controlled with a fully detected three color traffic signal. NY 910B ends at the intersection and the I87 Exit 4 NB on ramp continues north.

The accident study period was 39 months, 1/1/07 to 3/31/10. Based on the 132 accidents that occurred during the study period the accident rate is 9.46 ACC/MVM. This rate is greater than the expected accident rate of 3.59 ACC/MVM for similar highways statewide. There were 90 accidents during the 2 year HAL period. The majority of the accidents consisted of rear end, overtaking, and turning accidents due to traffic congestion, generally grouped around the intersections. There were no accidents involving pedestrians or bicyclists. Of the 127 accidents on this section of highway with pavement condition reported, 25 (20%) occurred on wet pavement and 5 (4%) on snow/ice/slush pavements. There were 11 accidents during the morning peak from 6 am to 9 am and 34 accidents during the evening peak from 3 pm to 6 pm.

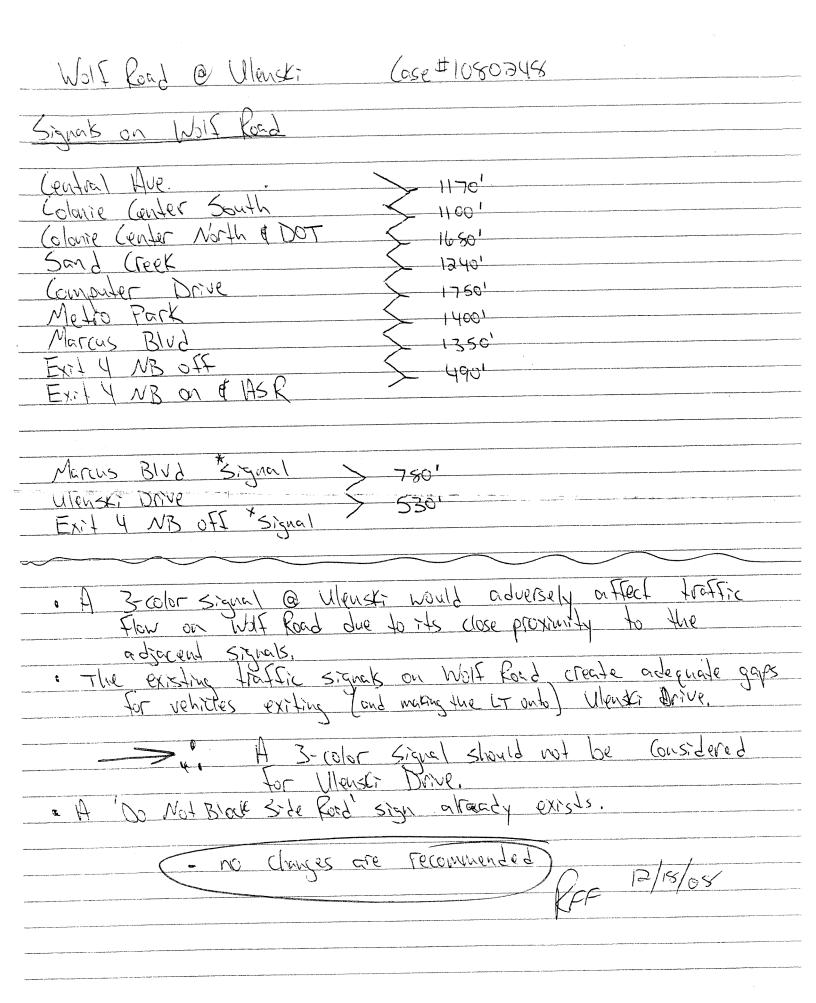
A signal study was recently performed at the intersection with Ulenskie Drive at RM 1017. Case #1080248, completed 12/28/08, resulted in no safety recommendation.

### **Proposed Solution**

There is a project, PIN 1721.51 currently scheduled for letting 11/15/12, to address improvements on the Northway at Exit 4. We have no safety recommendations to offer for the project at this time on this section of highway.

### Action Taken

Memo to R-1 Design dated 2/20/11.



Parked Vehicle

Fatal Injury

# DEPARTMENT OF TRANSPORTATION

Sheet 1 of 10

Right-angle

TRAFFIC ENGINEERING AND SAFETY DIVISION COLLISION DIAGRAM Albany Town of Colonie County Municipality NY 910B : RM 910B-Intersection MED From 1/1/07 To . IBT ExitY AC 151/Albany Shaker Rd NBonramp (80(11)(12)(13)(13)(13)(13)(13)(14)(15)(14)(15)(14)(28)(25)(23)(22) > 100 8 (B) (B) (B) (B) (B) (B) (B) 136654111198 THE BEE N Ulenski K (13P Marcus Bli N-1910B/WalfRd MANNER OF COLLISION -Rear-end Head-on ← Moving Vehicle ← - Pedestrain Side-swipe ← B -Bicycle ← M - Motorcycle Out of control ☐ Fixed Object ← → → → Backing Vehicle Skidding O Personal Injury ← Stopped Vehicle

Q\_ Overturned

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

7

TE 213 (9/79)

SHEET 2 OF 10

| TO 1986    | ROUTE NO. OR STREET NAME<br>NY 910 B / WOLF Rd | N: N: 010        |          | IDITIONS ROADWAY CHARACTER HUDWAY SURFACE 1. Straight and Level CONDITION 2. Straight and Grade 1. Dry 4. Snow/Ice 2. 3. Straight at Hillcrest 2. Wet 5. Slush 3. Straight at Hillcrest 3. Muddy 10. Other 4. Curve and Crade 3. Muddy 10. Other 5. Sush 3. Audighted 5. Curve and Grade 6. Curve at Hillcrest 6. | Use Codes from MV 104 Police Report | 386                       | IND OVERTHEE-SB V1 CHANGED LANES | DID REAR END-NB, V-2 STOPPED IN TRAFFIC | 6 1016 PEAREND- NB, V-1 SLOWED TO MAKE RIGHT TURN | INTOVORTABLE- N'B, V-1 CHANGED LANES | POIT RIGHT ANGLE V-1 ENTERED TEMPFIC WE, STRUCC BY NBV. | INTIRICIAT ANGLE, V-1 ENTERED TRAFFIC WB, STRUCK BY NB VA | INTIREAR END-NB, V-2 STURPED IN TRAFFIC | 1017 RIGHT ANGLE, V-1 WAVED INTO TRAFFIC WB, STEWER BY NB V. |       | 8 INB OVERTAKE-NB 11-1 CHANGED LANES | 5 POR RETAR END-NB, V-2 STORED IN TRAFFIC AT SKNAM | 6 MB REAR GNO-GB, V-2 STAPPED IN TEAFFIC AT SIGNAR | ING NB V-1 ATTEMPTED LEFT THEN STRUCK BY SB V-2. | 1018 REAR END-CB, VI STOPPED IN TRAFFIC AT SIGNAL | TOP REPOR FIND-NB, MOTH VEHICLES STAPLED 1-1 JAMPED ON GREEN | THE MILES OF STATE OF STATE STATES AND STATES HATTER |
|------------|--|------------------|----------|---|-------------------------------------|---------------------------|----------------------------------|---|---|--------------------------------------|---|---|---|--|-------|--------------------------------------|--|--|--|---|--|--|
|            | ROUTE  | TNI TA           |          |   | (2)                                 | APPARENT<br>CONTRIBUTIN   | 2                                | =                                       | 91.76   | 3                                    | _   | 1   | 7                                       | 1  | 2,19  | 13,18                                | 99 h   | 33-  |  | 6   | コ  |  |
|            | 1417   |                  | 1        |   | H3                                  | МЕАТН                     | 7                                | N                                       |   | 2                                    | 3   |   | 3                                       | 2  | 2     |                                      | 2  | =  | 7  |   | 7  | =  |
|            | 0  |                  |          | ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories  (6 7 8 9   | 30                                  | MOADA<br>SARRUS<br>FIGNOS | 7                                | 7                                       |   |                                      | 7   |   | 7                                       | 2  | _     |                                      | 2  | ナ  |  |   |  | =  |
|            | $\exists$                                      |                  |          | codes from at right of the catego   | УА<br>ЯЗТО                          | MQAOR<br>CHARA            |                                  |   |   | _                                    |   | _   |   | _  |       |                                      |  | 2  |  | N   |  | <u>ا</u> ا   |
|            | ENT  |                  |          | S S S S S S S S S S S S S S S S S S S   | SNOI                                | LIGHT<br>CONDIT           | 7                                |   |   |                                      | 3   | 60  | ho                                      |  | 1     |                                      | 1  |  |  | 5   |  | F  |
|            | OR IDENT.                                      |                  |          | (9)   | \ \T                                | зелеві                    | PI-1                             | PT.                                     |   | 2 400                                | 600   | 100   | 600                                     | 100  | 600   | 17                                   | 1  | 8  | 4  | 00.0  | 0027   |  |
|            |  | mile             |          | 4   | <b>∧</b> ЕН'                        | NO. OF                    | 2                                |   | 2 2   | 2                                    | P 2   | 67  | 6 9                                     | 9  | 1=    | 2                                    | P 2  | 1 C  | 9  | P 2   |  | _  |
| ì          | h h  | -5               |          | 101   | 10                                  | @ ¥                       | 9865                             | 5:01.P                                  | 3:00 P  | d'th'h                               | 8:04P   | 6398  | 181 m                                   | grosp  | 3:01A | 9152P                                | 7:06   | 11:384   | 5137   | 43156   |  | 1  |
| _          | Hbany  | n<br>C           | <u> </u> | IOD<br>FROM<br>////   | 131                                 |                           | 10                               | 5                                       | 10  | 150                                  | 10.7  | 10  | 167                                     | 10   | 5     | 150                                  | 2  | 150  | To   | 1000  | 10   | -  |
| .O.        | H  | u                |          | PERIOD<br>FRC<br>L/<br>TO   | m                                   | ©<br>DATE                 | 126                              |   | 15  | 三                                    | 8   | 2   | 12,0                                    | 12   | 7 7   | 8                                    | 122  | 200  | 2  | 2/12  | 5  |  |
| DIAGRAM NO | COUNTY   | Ø TOWN<br>□ CITY | V1 L L / | ME<br>ER<br>HS  | 6                                   |                           | 12                               | 2                                       | 1   | 3                                    | 10  | 0   |   |  | -     | . 0                                  | 8  | 12/2   | 1 CM   |   | 5  | <del> </del>   |
| OIAG       | 8  |                  | ]        | NUMB<br>OF<br>MONT  | W                                   | © <u>9</u>                |                                  |   | 5   | 丁                                    | (V)   |   | 1                                       |  |       |                                      |  |  | -  | 1=  |  | 1  |

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM) TE 213 (9/79)

SHEET 3 OF 10

----STONE 1/2 SIID ONLICE 句多式 SIGNA **ルラ/**へ THE PER (-) A Snow Sleat/Hail/Freezing Rain Fog/Smog/Smoke Other P. 00 4.2 STANK Omy (AL15 3 と言う 99 8 IN TOAFFE SIGNE 8B B 9 ST RECEDEN 9 ME 7 SER SIGNAL 4 SIGNAL 5 上 WEATHER 5 4 3 25 五 Clear Cloudy Rain 区 STRUCK STARCTED さると PAFFILL CASE NO. 方所を元 STRUCK TRAFFIC STONG さられるよう -CANED IAND STAPPED IN TRAFFIC Z 区 DATE BRAKED ABOUTEN FILE £46.600 B STORED SLOWING B Snow/Ice Slush Other DESCRIPTION TUREN ROADWAY SURFACE STUPPE 7 1-1 PHANGED TARI TURN \_ TURN THE S STUPPED STIPPED STAPED L L 413 C Dry Wet Muddy 100 de BOTH VEHS 四四四 VI WITTERMETED LET \_ **(E)** るの AFTEMPTED LEFT Use Codes from MV 104 Police Report LITTE MITTER \_ 7:7 7-7 (-) (-) WINED MANEE ~ رب اب see back of this form for codes 7 HOADWAY CHARACTER
1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Grade
6. Curve at Hillcrest 1/1 ATTEMPTED 7 AT INTERSECTION WITH/OR BETWEEN MERCHAKE - CO NB. 9 3 NBS END-NB. 9101-1011-3016 **B** GND-NB. 9 END-NB ATTE END-END END-FIRE CND-ROUTE NO. OR STREET NAME FB 17 REAR RER MYTH RCK RCK REPAR REAR REPR REAR REPR NE G MM3 NY 9108 Dark Road Lighted Dark Road Unlighted 1019 5 LIGHT CONDITIONS
1. Daylight 60 9 0 019 5 5 1) 50 9 5 010 019 CONTRIBUTING **FACTORS** RM APPARENT @ 2 7 7 Q 1 تر 二 سپوست آسست 17/7 4. r. 4 7  $\sim$ N N ھ ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories N (G) **MEATHER** CONDITION 07 ROADWAY SURFACE \_\_\_\_ (@) RHARACTER 6 YAWGAOA تــ <u>\_\_</u> OR IDENT (<u>o</u>) CONDITIONS 7 P.H.N. LIGHT BE 000 800 P00 000 900 001 P DO 1 100 600 É ம SEVERITY SIF S 7 7  $\sim$ (7) ( (4)ио: оь лен: 7 7.308 1001 11:28 8 7:24AI カユラ Quin Z 12:27 7:059 ging Jh 2:2 11:18 A H00:3 Sim 4 9:18.7 TIME 7:151 9.08 (m)  $\Diamond$ \_ . フィア 5 5 80 5 FROM 5 S 10 5 5 6 9 5 TIME PERIOD 2 2 DATE 5 30 <u>~</u> 2 2 3 2 5/ 5  $(\sim)$ 00 VILLAGE σ - $C_{-j}$ DIAGRAM NO. \_ 2 3 TOWN CITY 8  $\mathcal{D}^{\sim}$ COUNTY NUMBER MONTHS S 5 P 51 C £7 0  $\Diamond$ 0-9 Θ <u>\_\_\_</u> C-3  $\mathcal{C}$ 3 5 Ę., C-4

| *****  |   |
|--------|---|
| •      | - |
| (6//6) |   |
| E 213  |   |
| F      |   |

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

2

OF

SHEET

/EE/ R GRIN 15 MIS 四 476 AT STANNA Thim PED ON SIGNE Cloudy Rain Snow Sleet/Hail/Freezing Rain Fog/Smog/Smoke かなが MARDE 7-7 STORED EB 9 3 Si 721 14/2 BU 「CRAPACIO <u>~</u> 118117 WEATHER STRUCK 1-1 SLOWING IN TRAPPIC 3 EXITING 四 Q08 STOLCE STRUCK 93 BOTH VEHICLES STARTING STRUCK CASE NO. STRUCK NOTERSECTION STARTED CED DATE FILE - 464600 CHANGED LANGE MAKING В TUREN Snow/Ice Slush Other 1214H DESCRIPTION MOST CONFIGUR STIPPED IN CONDITION JACK L ER V-1 ATTEMPTED LEFT THAN THEN MACK STAPPED WBV-1 MADE STURRED ATTEMPTED LEFT BOTH VERS Dry Wet Muddy MITERIALED LEA WB V-1 ATTEMPTED LEFT I'I KITEMITED LEPT Z 019 Use Codes from MV 104 Police Report 8 ≯ 7 see back of this form for codes REPAREND-NB > ROADWAY CHARACTER 4 AT INTERSECTION WITH/OR BETWEEN 1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Grade
6. Curve at Hillcrest B END-NB GWO-NB 8 ON POSTERIOR - N.C. OUERTHICE-EB RM910B=1101-1016 REPAREND-SA 31214 END-ON BROKE-ROUTE NO. OR STREET NAME MERTANCE SR 1/1 O PR VERW PEAR 910B Dusk Dark Road Lighted Dark Road Unlighted 019 GHT CONDITIONS Daylight 810 1018 018 1019 5 DIG 5 2 APPARENT CONTRIBUTING FACTORS/ M 7 D ゴ 1 J 1 0 7 7 N 3  $\mathcal{C}_{\mathcal{I}}$ T 7 7 (G) **МЕАТНЕЯ** 104 ------ENVIRONMENTAL Use codes from MV 16 (shown at right) for these categories ROADWAY CONDITION 7 ゴ 4 CHARACTER YAWQAOR OR IDENT. 7 t CONDITIONS J (G) THOIT 4-29 000 400 P D 0 -12 000 Qud Ø100 p 00 g 000 (v) **SEVERITY** C (-) ISNIE (4)40 'ON 2:016 19156A Sislep 9:21P 7308 1.30 P 6.63 P  $\bigcirc$ 0 19:378 481: 5130P TIME 2:2 3:671 185 0,7 101 9/ (<sub>(D)</sub> 9 Dar 2 200 118 99 2  $\frac{2}{2}$ 8 14 08 14 08 FROM 08 000 6113 108 VILLAGE OF 80 28 TIME PERIOD 80 DATE 3 30 2 7 S (P) 5 0 -و\_ DIAGRAM NO. ⊠ TOWN D \_ COUNTY CITY MONTHS NUMBER 7 0  $\frac{2}{2}$  $\frac{2}{2}$ 5 28 2 716 9 7 3 CO

Jun TE 213 (9/79)

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

| SHEET OF 10 | ROUTE NO. OR STREET NAME  NY 9/0 B / NOIL RA | NWITH/OR BETWEEN                 | INS ROADWAY CHARACTER ROADWAY SURFACE WEATHER  1. Straight and Level CONDITION 1. Clear  2. Straight and Grade 1. Dry 4. Snow/Ice 2. Cloudy 3. Straight at Hillcrest 2. Wer 5. Slush 3. Rain 1. Curve and Level 3. Muddy 10. Other 5. Sleat/Hail/Freezing Rain 6. Fog/Smog/Smoke 6. Curve at Hillcrest 1. Other 1. Ot | e Codes from MV 104 Police Report see back of this form for codes  (1) DESCRIPTION | DIG KEAR END-NB, BITH VEHICLES STARTING IN TRAFFIC  | 1019 PERRE END-NB, V-2 STOPPED, STARTED, STUPPED AGAIN | 9 WB YI ATTEMPTED LEFT THAN STRUKE BY CO V-Z | 019 REAR END. WB, V-2 STORED AT RED TRAFFIC SIGNAL | MY REAR END-NB, V-1 STAPPED IN TRAFFIC AT SIGNAL | 019 REGAR GILD: 116, VA STURPED IN TEMPLIC AT SILVINK | OIG REAR ENO CB, BOTH VEHS STUPPED, OP-2 FOOT SLIPPED BORNE | 1019 REPIR END-EB, V-Z SLOWING TO TURN | 1019 REAR GND-NB, 11-2 STAPPED STARTED STORPED ALAIN | DIG EB 1/2 ATTEMPTED LEFT THEN STEUCE BY WB V-1 | 1019 REAR END- WB, V-2 STURED IN TRAFFIC AT SIGNAR | 1019 RIGHT ANGLE, NB VI STOUCK WE UZ, BOTH CLAIM GREEN | MIGHT REPARENCE NO. V-1 STUPPED BEHIND MUINVALVED VEH | 1019 PLGHT ANGIE EB VI PASSED RED SIGNAL STENKE NEVIL | DIA RIGHT ANGLE EB V-1 PASSED RED SIGNAL, STRUCK NB VIZ | The has to have more or one of the second se |
|-------------|--|----------------------------------|--|--|---|--|--|--|--|---|---|--|--|---|--|--|---|---|---|--|
|             | -  | AT INTERSE                       | LIGHT CONDITIONS 1. Daylight 2. Dawn 3. Dusk 4. Dark Road Lighted 5. Dark Road Unlighted   | O Use<br>APPARENT<br>CONTRIBUTING<br>FACTOHS                                       | 191   | 7  | 7  | 0  | 10   | <u> </u>  | 0   | <u>0</u>                               | 10   | 0   | <u>0</u>   | 0/   | 26 10   | 17,7 116  | 00,09   | <u>-</u>   |
|             |  |                                  | 4 6  | мертнея<br>  |   |  |  |  |  | 3   | _   |  |  |   |  | )  |   | 2   |   | (  |
|             |  |                                  | ENVIRONMENTAL Use codes from MV 11 (shown at right) for these categories  (6) (7) (8) (  | YAWAA<br>SURFACE<br>MOITIGNOD  |   |  |  |  |  | N   |   |  |  |   |  |  |   | _   |   | C  |
|             |  |                                  | RONMI<br>odes fro<br>n at rig<br>categor   | ROADWAY<br>CHARACTER   | 5   |  |  |  | _  | - Arthurstan  |   |  |  |   |  | _  |   |   |   |  |
| )<br>       | P.H.N.                                       |                                  | Use co   | LIGHT<br>CONDITIONS  | _   |  |  |  |  |   |   |  |  |   |  | 3  |   | =   |   | _  |
|             | OR IDENT.                                    |                                  | (9)  | SEVERITY   | 600   | PEI  | ppo  | 1-11   | 中  | PBo   | pyo   | 1-1                                    | Ppo  | Pog   | ì  | 600  | 000   | Da d  | 000   | 1 - 10   |
| Ì           |  | Z                                | 9  | NO. OF VEH.  |   | 2  | $\sim$                                       | 2  | 6  | 2   | 107   | <u>C</u>                               | 2  | A 7   | 2  | 7  | P 2   | 7 0   | 7   | (  |
| ı           | -  | . 3                              | 107  | (a) (b) (b) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d                             | H.77.H  | 8,31A  | 901:0  | 110:21   | 5:008  | <u>a</u>  | 12.11.5%  | 6:29P                                  | 3:008  | 10:23   | 11279  | 6:5sp  | 1:37  | 3   | 8152A   | 1 11 1/ 18   |
| NO.         | X  | □-TOWN<br>□ CITY<br>□ VILLAGE OF | PERIOD<br>FRC<br>TO  | 00 DATE  | 4 25 08   | 5/1/08   | 89/8/8                                       | 80 119   | 80 2119  | 30 141 9  | 30/1/1  | 30 15 11/2                             | 7 28 08  | 20121   | 29/62/   | 80/21/8  | 20 7 6  | 9 3 08  | 80000   |  |
| DIAGRAM NO  | COUNTY                                       | TOWN CITY                        | TIME<br>NUMBER<br>OF<br>MONTHS   | (n) (D) 5  | Constitute of the contract of | 20   | S  | 25   | 53   | 55  | SS  | S                                      | 5  | 25  | 57   | 0  | 5   | 3   | 29  |  |

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM) コ

TE 213 (9/79)

SHEET 6 OF 10

| TO A C   | AT INTERSECTION WITH/OR BETWEEN  R.M. 9106-1101-1016 TO 1019  DATE  CASE NO.   DATE  2/9/4  DATE | GHT CONDITIONS ROADWAY CHARACTER ROADWAY SURFACE WEATHER 1. Straight and Level CONDITION 1. Clear 2. Straight and Grade 1. Dry 4. Snow/lce 2. Cloudy Dusk 3. Straight at Hillcrest 2. Wet 5. Slush 3. Rain Dark Road Lighted 4. Curve and Level 3. Muddy 10. Other 5. Sleet/Hail/Freezing Rain Dark Road Unlighted 5. Curve and Grade 6. Curve at Hillcrest 10. Other 10. Othe | (① Use Codes from MV 104 Police Report ————————————————————————————————————   | GO U-1 ATTEMPTED LEFT TWRN, STRUCK BY WG V-2 | 4 MM REAR END-NB V-2 SLOWING AT SIGNAC, OP-1 LOOKING GREEK | MIG OVERTAKE-NB V-2 ATTEMPTED LEFT FROM RIGHT LANE | 7 1019 NO NY ATTEMPTED LEFT THRN, STRUCK BY EB V-7 | 7 1019 EB V-1 ATTEMPTED LEPT THREN STEWEL BY WB V-Z | 17 IDIA RIGHT ANGLE, NO VI PROSED RED SIGNAL, STRUCK WB V.Z. | 7 1019 OVERTHEE-SB CB V-2 MADERIGHT THRN WBV-1 MADE LEFT | 4 1019 REAR END-WB V-1 STOPPED IN TRAFFIC AT SIGNAL | 9.26 1016 REAR END-SB, V-2 BRAKED ABRUPTLY BEHIND INVINVILVED VEH  | INT REPRENTENDING, V-2 STOPPED IN TRAFFIC | 4 NOT REAR END. NB, V-2 STUPPED IN TEAFFICE | 4 INTIREAR END-NB Y-L& V-3 STOPPED IN TRAFFIC | 4 1017 REAR END NB 1/2 STOPPED IN TRAFFIC | 4 IDIS REAR END-NS Y.L STYPPED IN TRAFFIC AT SIGNAR | 9 MIR REPORTED NG V-2 STUPPED IN TRAFFIC |
|----------|--|--|---|--|--|--|--|---|--|--|---|--|---|---|---|---|---|--|
|          |  | 7-4.6.4.7.   | PAMPAY SURFACE CONDITION MAENTER  |  | 7 )  |  |  |   | 2  | 8 2  | 52  |  |   |   | 2 1   |   | 7   1   |  |
| Ē        | 2.1.6.0.1.1  | 7-4.6.4.7.   | YAWDAONS CHARACTEF CHARACTEF COADWAY CONDITION WEATHER                        |  | 7 1 1  | 3  |  |   | 8 2 11 11  |  | 5211  | and the second s |   |   | 2 1 1 1 1                                     | 1 1 4                                     | 7 1 1 1   |  |
| Ē        | OR IDENT. [110.9.17  | ENVIRONMENTAL LIGUSe codes from MV 104 1. (shown at right) for 2. these categories 3. (b) (c) (d) (d) (d) (d) (e) (e) (e) (e) (e) (e) (e) (e) (e) (e   | SEVERITY  LIGHT  CONDITIONS  ROADWAY  SURFACE  SURFACE  CONDITION  CONDITION  | 1 1 1 000                                    | PT-1   | 100d   | 3 PE-1 4 1 1 1                                     | 000   | E 2 11 11 00d 7  | 2 111 00d  | 2 11 000  | 2 800 11111  | 2 MZ-1 1 1 1 1 1 1                        | 1 1 1 1 1 2-24 2                            |   | 2 pro 4 11 1                              | 2 100 1 1 1 2                                       | 2/072                                    |
| E        | OR IDENT.  | ENVIRONMENTAL LIGUS Codes from MV 104 1. (shown at right) for 2. these categories 3. (b) (c) (d) (d) (d) (d) (d) (e) (d) (e) (d) (e) (e) (e) (e) (e) (e) (e) (e) (e) (e  | MO, OF VEH. SEVERITY CONDITIONS CHARACTER ROADWAY SURFACE CONDITION CONDITION | 7 roo 14 1                                   | 2 PT-1 1 1 1   | =2   | 3/11   | P 2 P00   | 2 11 1 000 2   | 2 11 1 000 2   | 2 11 000 2  | 129A 2 PDO 11111   | 2   | 2-24 2                                      | 1 1 h 2 Id 8                                  | 2 000                                     | 2800 111 11   | 7  |
| I I NHOW | OR IDENT. [11 0 4 17   | C   C   C   C   C   C   C   C   C   C  | MO, OF VEH, SEVERITY CONDITIONS ROADWAY CHARACTER ROADWAY CHARACTER GONDITION | 1 h 0012 dars &                              | PT-1   | 12 PDO U   | H-J  | 2 600   | 2  | 2 111 00d  | 2 11 000  | 4/24/09 7:29A 2 PDO 1111   |   |   | 109 Sizep 3 PTZ 4 1 1                         | oad                                       | 77 009 L 6:56A 2 POO 1 1 1 1                        |  |

TE 213 (9/79)

3

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

0 9 P SHEET

3 3 OP-1 WAYING IPS TRAFFIC SB V.1 V.2 STRUKK VA SLIMED PERFE シアン 8 SIGHT いるとか STAPPED Snow Sleat/Hail/Freezing Rain Fog/Smog/Smoke Other 66 725 THE SIGN 7 をごろ ) TOR STORICE STRAICK TRAFFIC STRUCK Ţ 00 OP-1 FOOT 0 mV RED TRAFFIC NEATHER 2-1 2 STREE U-1 + V-> STUPPED IN TRAFFIC STURRED Cloudy Rain CASE NO.  $\bigcirc$ STRUCK STERPORD IN TRAFFIC TRAFFIC 古を下して MINING MINING U J. C. SICHER (ED) DATE FIE - KK 4 KK 60 € SKANK TREFE В STURRED TRAFFIL Snow/Ice DESCRIPTION 909 FOR STARTED RUR V-1 MAKING RIGHT ROADWAY SURFACE CONDITION Slush Other 上 2 M MMMD1S DED SE SA ULI ATTERMITED LEFT THRI BOTH VEHICLES 1-1 STAPPED 4, 12, 0 STUPPED STARTED STAPPED GNT BRED BOTH JETS ENTERED 0 PASSED 1. Dry 2. Wet 3. Muddy 6101 Use Codes from MV 104 Police Report see back of this form for codes 7 --7-1 7-1 7 ROADWAY CHARACTER

1. Straight and Level > رح الم NB NB AT INTERSECTION WITH/OR BETWEEN Straight and Level
Straight and Grade
Straight at Hillcrest
Curve and Level
Curve and Arade
Curve and Grade GND-NB RM 910B-1101-1016 <del>2</del> END. NB END-NB GND-NR 93, END- ED GND-NB <u>E</u> END. NB FIND-NB PRIL RICE TURN END-ROUTE NO. OR STREET NAMI OVERTRIKE REME REPART PORTING KENG KENG K ENA 医区 ROK KIKHT RURK DEAR 5 REPR SPR A 96.4.6.6 Dusk Dark Road Lighted Dark Road Unlighted LIGHT CONDITIONS
1. Daylight
2. Dawn
3. Dusk
4. Dark Road Lighted
5. Dark Road Unlighted 2016 K hana 1018 250 NE 018 810 918 019 010 019 APPARENT CONTRIBUTING 810 98 5 100 FACTORSIM 010 @ W ~ 5 1 2 7 Q S 7 7 \_\_\_ 777 ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories ( () CONDITION 4  $\odot$ SURFACE YAWGAOR N 4 RATOARAHS 3 P.H.N. OR IDENT (<u>6</u>) SOUDITIONS 7 THOIT LANDIN LAND 000 5 1-70 000 900 000 000 000 P 00 5 (P) **SEVERITY** 0) 5/18/18 (4)4 7 C' CI NO' OF VEH. 9  $\omega$ ر\_\_' 21598 and a second 0 0 4:318 HS: 5:05P 2270 00016 15,00P 21.5sp TIME 0 121:61 H.HS I 7:34 07 (c) HIBRIT 120 109 100 FROM 60. 50 0 8 00 CITY
VILLAGE OF a 100 109 Ç 2 24 DG 5 **TIME PERIOD** 9 DATE 2 30 3 H110  $\overline{\lambda}$ (0) 5 6 3 3 10 5 DIAGRAM NO. **™ TOWN**  $\subset$ 10  $\mathcal{C}$ (Y COUNTY  $\in$ NUMBER MONTHS T 6 <u>ئىن</u> سى Θ 9 3 ... 3 Ġ 60 Œ, 6 Š 60 6

DETAILS OF ACCIDENT HISTORY FOR LOGATION (AS SHOWN ON COLLISION DIAGRAM) \_\_\_\_ TE 213 (9/79)

9

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9

SHEET

JAMAPED ON GREAT 20-2 LOOKING LEF ADD I MANUAL IFTA 15 Y-2 となれ、 SH15 BY EB 1/2 STARTED ROP, STUPPED PLAIN 2/ 3W MISI NIGNAR Steet/Hail/Freezing Rain Fog/Smog/Smoke Other MADE 7:7 のの 12 12 13 RED / >wa 22 **2**2 Ŕ 5 RIGHT NB V-1 PASSED RED SIGNAL, STRUCK TRAFFIC 8 WEATHER 5 \$ TRAFFIC DT Clear Cloudy Rain 6 SICHAL CIV.III STRUCK Snow STRUCK STRUCK TRAKK VEHICLES STURPED CASE NO. MEDIS 0 DATE STRUCK MPKE N3315 \$ 51H717 M 1-1 LW3 FILE CD В STUPPED AT RED I CTUBOLD AT OLD Snow/Ice Slush Other DESCRIPTION RED SURFACE TURN STUPPED AT STURPED IN CL MIMO IS CARN TAREN WB 1-1 ATTEMPTED LEFT THRI ATTEMPTED LEFT THAN 4.0.0 STOPPED V-1 MARDE PASSED ROADWAY SI CONDITION 1. Dry 2. Wet 5 5 0 ALTEMPTED LEFT ATTEMPTED LEFT 正是 Use Codes from MV 104 Police Report see back of this form for codes \_ 1-/ ATTEMPTED N 16 HOADWAY CHARACTER
1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Grade
6. Curve at Hillcrest <u>-</u> ≥ 00 × 9101 AT INTERSECTION WITH/OR BETWEEN GNJ-UND REAR END- NB 88 ENO-NB MERTAKE-SB GNO-NB GNO. NB 610 ANGUE. RILLY ANGIE ENO-ROUTE NO. OR S'REET NAME 120 J.J. 1 1.6 /-PFAR RIGHT I CK PAR KEAR <u>S</u> 9 2 5 5 MY 910 & Dusk Dark Road Lighted Dark Road Unlighted 47 LIGHT CONDITIONS
4 1. Daylight
2. Dawn
3. Dawn 019 019 6.0 <u>ام</u> 0.9 5 5 910 0 010 014 CONTRIBUTING **FACTORS/UM** APPARENT 7 1 \_\_\_ 1 L 9 تہ 77 7 ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories (G)  $\subset$ 1 C **MEATHER** h 0 | 1 CONDITION  $\overline{C}$ <u>@</u> SURFACE RETOARAND CONDITIONS OR IDENT (e) LIGHT DUG P 00 PDO 5 (B) 112000 ST **SEVERITY** Imit 5  $\sim$  $C\gamma$ 9  $\bigcirc$ HO ON  $\overline{\phantom{a}}$ ΛEH' 12:57 11:35A 9.084 1:05P 17,44,0 92039 4.557 8:098 9:SIA Q-9339 0 1.SIP dhsig TIME 7:05 3 3:28 32% 2 (c) Albany 101 13 ☑ TOWN □ CITY □ VILLAGE OF . 109 FROM 00 60 50 12 6012 50 120109 50 50 90 0 90 09 00 TIME PERIOD DATE 2 7.7 5 3 ( ) a 9 87 0 5 DIAGRAM NO. 0 9 T Q C V COUNTY NUMBER MONTHS Q 3 2 9 9 90  $\Theta$ 92 \_ <--

TE 213 (9/79)

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

0 OF  $\mathcal{Q}$ SHEET

CBV-C MALING ALLE OP V-1 LOAKING CEFT SLIPPED GRANT 5 15/105 7.7 STUPPED AGAIN SIGNAT SIANA  $\leq 5$ Z 25 Rain DMV/ALIS 3 \$ Sleet/Hail/Freezing Fog/Smog/Smoke Other STRUCK 11/01/2 4 OP-3 FOOT 9 (J. 6) 6 99 63 U ال 1 WEATHER 25 3 STRACK ठ STUPPED Clear Cloudy Rain Snow 3 STRUCK TOAFFIC STREAM ROK ġ. SIGNAL グライン ころんかし TRAFFIC STOWCK STRACK STRUCK STRUCK STRUCK CASE DATE WB V-1 MAKING LEFT ÷46460 FILE 2000 EUC V-1 CHANGED LANES ВҮ DESCRIPTION Snow/Ice Slush Other ROADWAY SURFACE
CONDITION
1. Dry 4. Snow/Icc
2. Wet 5. Slush
3. Muddy 10. Other PASSEN RED 2 STARTED RUR TURPEN SB V-1 ATTERNITED LEFT THEN STUPPED IN TARN WB V-1 ATTEMPTED LEFT THAN TURK INB V-1 ATTEMPTED LEFT THEN 記される UDIT TURN STARED VI STAPPED V-1 ATTEMPTED LEFT WB V-1 ATTEMPTED LEFT U-1 ATTRINGTED LEFT 2 Use codes from MV 104 Police Report <u>-</u> 7-7 see back of this form for codes ALL 1.7 (-) ROADWAY CHARACTER
1. Straight and Level
2. Straight and Grade WB 1-1 ATTEMPTED 8 EL AT INTERSECTION WITH/OR BETWEEN -58 Straight at Hillcrest Curve and Level Curve and Grade Curve at Hillcrest CMO-NB لل REAR END-NB, 222 END-NB NERTHE-NE Unit Of the 8 9101-1011 Ž 列門 ROUTE NO. OR STREET NAME MANDERTAKE REPAREND-ON J Nott MINIT EHI REAR INIG SCAN REPORT 3 Daylight Dawn Dusk Dark Road Lighted Dark Road Unlighted 91108 9108 LIGHT CONDITIONS
1. Daylight 019 1010 CONTRIBUTING FACTORS IN 019 019 1019 010 5 1019 018 0 = 26 APPARENT RM 5 <u>ت</u> تح \_\_\_\_ 2 \_\_\_\_ 2 ۲. [ \_ 7 44110111 7 ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories  $\overline{\phantom{a}}$ N 51 6 **МЕАТНЕЯ**  $\overline{\phantom{a}}$ **©** ( SURFACE натранано YAWQAOR OR IDENT. CONDITIONS 5 J 10000 B 6 二 3 \_ THOIT Proud 600 800 600 PNO 100 000 ppo J. 00 **⑥** SEVERITY Slanic (4)J ~ 7 0 NO' OF VEH. C-C رم 12:44 9:00 9 1:138 0 7,598 0 3:56P S:44B 3:56P 7.413 # 4:17 4:238 TIME 2:01 10:1 7:01 3:18 01/ (c) bany 7 122/09 FROM ر 0 کا 1009 9 09 9 S 0 7 17 09 09 00 2 9 TIME PERIOD くニしょー 09 0 Ø TOWN □ CITY □ VILLAGE ( DATE 11/8/11 5  $\odot$ 19210 1 5 12/31 5 9 2 00 3 DIAGRAM NO. Q -4 0  $\bigcirc$ COUNTY NUMBER MONTHS OF OF 5 2 \_ \_\_ 7 N 5 ~ Θ 2 7

TE 213 (9/79)

DIAGRAM NO.

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

OMY (ALIS) SIMS OF S S S 1. Clear 2. Cloudy 3. Rain 4. Snow 5. Sleat/Hall/Freezing Rain 6. Fog/Smog/Smoke 10. Other V-2 STOPPED IN TRAFFIC HT SIGNAL STRUCK AEAR END-NB V-1 STOPPED IN TRAFFIC AT SIGNAL 11/0/17 SHEET MED EB 1/4 ATTEMPTED LEFT THEN STRUNCE BY WB WEATHER CASE NO. NB Y-1 PASSED RED SILVAL DATE FILE ВХ ROADWAY SURFACE
CONDITION
1. Dry 4. Snow/Ice
2. Wet 5. Slush
3. Muddy 10. Other DESCRIPTION 1019 Use Codes from MV 104 Police Report see back of this form for codes RM 9104-11011-1016 TO HOADWAY CHARACTER
1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Grade
6. Curve at Hillcrest AT INTERSECT ON WITH/OR BETWEEN KEAR ENO-EB KIGHT ANGLE MURP RA 11101417 ROUTE NO. OR STREET NAME LIGHT CONDITIONS
1. Daylight
2. Dawn
3. Dusk
4. Dark Road Lighted
5. Dark Road Unlighted NY 910B 9 500 00 **FACTORS** 4010 77 \_\_\_ ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories 6 язнтазм S (<del>@</del>) ROADWAY SURFACE CHARACTER V YAWQAOR OR IDENT. CONDITIONS نــــ THEIT 0001 1900 1 டு **SEVERITY** Colonic NO' OF VEH. 1155P 11:39A S:06A 0:568 TIME Ibany <u>ල</u> X TOWN □ CITY □ VILLAGE OF \_ FROM 0 2 26 110 9 TIME PERIOD DATE 0 7 ~ COUNTY C-1 NUMBER MONTHS <u>0</u> OF 137 2 130 9 Θ 5

## **ACCIDENT SUMMARY SHEET**

| Access   |   | * Case #                 |
|--|---|--------------------------|
| Municipality Town OF COLONIE  Location 87I EX. 4 RONTE 155   | County<br>PIN<br>HSI#                             | 1721,51                  |
| Time Period ///07 - 2/28/10  | No. of Months                                     | 38                       |
| Accident Type No. of Accidents   | <b>Pavement Conditio</b>                          | n No. of Accidents       |
| Rear End Right Angle Overtaking Left Turn Sideswipe/ Head-on Right Turn Parked Vehicle Debris  Debris  Parked Vehicle Debris                 | Dry<br>Wet<br>Snow / Ice / Slush<br>Unknown       | 33<br>13<br>3<br>1<br>50 |
| Pedestrian Bicycle Animal Backing Fixed Object  W/ Utility Poles  W/ Guide Rail / Barrier  W/ Sign Post  W/ Trees  W/ Ditch / Embankment  W/ | Weather  Clear Cloudy Rain Snow Sleet Fog Unknown | No. of Accidents  2 /    |
| * TOTAL _50_   | TOTAL   | <u>50</u>                |
| Light Conditions  No. of Accidents  Day  Night   | Accident Severity Property Damage Injury          | No. of Accidents         |
| Night  | Fatal TOTAL                                       | 50                       |
|  |   |                          |
|  |   |                          |
|  |   |                          |
|  | ****.   |                          |

TE 56 (11/07)c

# NYS DEPARTMENT OF TRANSPORTATION OFFICE OF TRAFFIC SAFETY & MOBILITY / OFFICE OF MODAL SAFETY & SECURITY COLLISION DIAGRAM # \_/\_

10FZ

| Municipality Town OF Cold | טאיפי        | CountyALI   | BANY     | HSI #    | Case # |
|---------------------------|--------------|-------------|----------|----------|--------|
| ntersection; 87I a c      | EXIT 4 RAMPS |             |          | File     | -      |
| erlod <u>3</u> Years _3   | Months From  | 1/1/07      | To 2/28/ | By JJC   |        |
| *                         |              |             |          |          |        |
|                           |              |             | /.<br>/  | <b>3</b> |        |
|                           |              |             |          |          |        |
| ROUTE 155                 |              |             |          |          |        |
| LULIC 13?                 | <b>3</b>     |             |          |          |        |
| *                         |              |             |          |          |        |
|                           |              | #<br>#<br># | * /      |          |        |
| ,                         |              |             |          |          |        |
|                           |              |             |          | 872      |        |
| 1 7 -                     |              |             |          |          |        |

# NYS DEPARTMENT OF TRANSPORTATION OFFICE OF TRAFFIC SAFETY & MOBILITY OFFICE OF MODAL SAFETY & SECURITY COLLISION DIAGRAM # \_Z\_

|                 | COLONIE            | County _    | ALRAND     |      | HSI #  | Case   | #              |
|-----------------|--------------------|-------------|------------|------|--------|--------|----------------|
|                 | e EXIT 4  2 Months | From 1/1/07 | To 2/28/10 |      | File   |        | 2/22/          |
| CK 153 / SK 153 | WIONINS            |             |            |      | By JJC | _ Date | Z/23/11<br>TLS |
|                 |                    |             |            | Gara |        |        |                |

DETAILS OF ACCIDENT HISTORY FOR LUCATION (AS SHOWIN OIN COLLISION CINCIN

SHEET / OF Z

DIAGRAM NO. 152

TE 213 (9/79)

| ROUTE NO. OR STREET NAME | m Ps          | SECTION WITH/OR BET | 1010 WOLF KD.              | ROADWAY CHARACTER ROADWAY SURFACE  1. Straight and Level  CONDITION | Grade 1. Ury 4. Snow) re 2. Illicrest 2. Wet 5. Slush 3. Wuddy 10. Other 4. Snow rade 6. Snow ra | odes from MV 104 Police Report | APPARENT see back of this form for codes | CONTRIBUTING DESCRIPTION | 9.9 2026 SBU, R/ESBUZ MASBUS | 9,9 2026 SBU, R/E SBUZINTO SBUS | 9 2026 53 U, R/ESBUZINTO SBUZINTO 14 | 5 Zos6 58 Uz /NTO 518 U3 | 19 2030 SBV, Cle SBUZ | , 66 250 OFF RORD STRUCING SIGN TRADE | 9 2050 SBU, R/E SBUZ | 9 20 58 U. KlE 58 U. | 9 7030 SR 11. At 52 V2 1NTO SRU3 | 9 2330 SBU, NE 5802 | 9 :38 SBU, R/E SBUZ | 9,66 2035 SMIKES LUIDERAIL             | 9 2035 58 U, R/E SB U2 INTO 513 V3 | 9 2031 SBU, RIE SBUZ 1200 SBU3 1470 SBUY         | 9 250 WBV, 7/E WBV2 | 9 FOTO WBU, RIE NB (2 |
|--------------------------|---------------|---------------------|----------------------------|---|--|--------------------------------|--|--------------------------|------------------------------|---------------------------------|--------------------------------------|--------------------------|-----------------------|---------------------------------------|----------------------|----------------------|----------------------------------|---------------------|---------------------|--|------------------------------------|--|---------------------|-----------------------|
| RO                       | :<br>T        | ΑT                  | `<br>                      | LIGHT<br>1. Da  | 4.0.4.0.   |                                | ~~~                                      | CON                      |                              | -                               |                                      |                          | 0                     | 20,                                   |                      |                      |                                  |                     |                     |  |                                    |  |                     | 7                     |
|                          |               |                     |                            | AL<br>104   | (shown at right) for these categories (6) (7) (8) (9)  | ,                              |  | соир                     |                              | M                               | `                                    | -                        | 7                     | γ,                                    | 2                    | _                    | `                                | <u> </u>            | 7                   | 2                                      | -                                  | `  |                     |                       |
|                          |               |                     |                            | MENT  | right) f<br>gorles   | ) ,                            | AW<br>ACE                                | GAOR<br>SURF             | _                            | 2                               |                                      |                          | ~                     | 7                                     | _                    | `                    | ,                                | 2                   | 2                   | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \  | _                                  | -  | 7                   |                       |
| -                        | <u>ل</u><br>ن |                     |                            | VIRON   | own at   |                                |  | AOADA<br>AAHD            | -                            | `                               | <u> </u>                             | -                        | _                     | 7                                     | -                    |                      | `                                | `                   | / /                 | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \  | -                                  |  | 7                   |                       |
| 2                        | OR IDENT      |                     |                            | E S   | £ £ 6  | SNC                            |  | THĐI                     |                              |                                 | 1                                    | -                        | -                     | <u> </u>                              | 0                    | <b> </b>             |                                  |                     | 9                   | <del> </del>                           |                                    |  |                     | -                     |
|                          | ORI           |                     |                            |   | (r)  | ) ^                            | TIF                                      | SEVER                    |                              | 1 2                             |                                      | 0                        | 1                     | 8                                     |                      | <del> </del>         | Pool                             | 2 12                | R                   | 8                                      | Pool                               | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1            |                     |                       |
|                          |               |                     | 2/6                        | -   | 4  | НЭ                             | <u>^</u> =                               | 10.0V                    | <del> </del>                 |                                 |                                      | <u> </u>                 |                       | ┼                                     | 7 2                  | <del> </del>         | w                                |                     | 1                   | \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ | 1                                  | <del>                                     </del> | 1.                  |                       |
| -                        | 7             | 7                   | 070                        |   | 107  | 91/                            | (  | (a)                      | 3696                         | 5281                            | 1320                                 | 280                      | 0900                  | 1                                     |                      | 281                  | 1700                             | 1740                | 1.580               | 8011                                   | 083                                | 2773   | 70                  | 2089                  |
| NO.                      | ry ALBANY     | Z >                 | $\Box$ VILLAGE OF $\angle$ | PER   | •  | 7/28/2                         |  | (2)                      | 1, 1                         | 122/02                          | (////02                              | 7/1/07                   | 127/02                | 10                                    | 17                   | (10/0)               | 67                               | 121/07              | 2/22/67             | 1/1/07                                 | 2/21/07                            | 5/10/07  | 7                   |                       |
| DIAGRAM NO               | COUNTY        | NWOT [2]            |                            | TIME  | NUMBER<br>OF<br>MONTHS   | 1                              | 7  | ⊕ <u>Ş</u>               | 2                            |                                 | 1 ~                                  | 7                        | , 4                   | 20                                    | 7                    | D-                   | 0                                | 0/                  | 1.                  | 2/                                     | K                                  | ) }  | 1                   | 160                   |

DETAILS OF ACCIDENT HISTORY FOR LOCALION (AS SHOWN ON COLLINION COLLINION)

OF 4

SHEET \_ DIAGRAM NO. 122 

| E NO. OR STREET    | BY<br>DATE    | <u>                                     </u>   |                                 | , R/EWB  | (i)    | to the second second | 1 1 S O S 1 | 9 : 1030 SOU, MOTOLCYCLE PORT STS V2 | 9,66 1035 SBV, R/ESBV2 | 9,19 2035 ST3 1, R/E ST3 UZ | 2  | 2,19 2035 MISSES TURN LOGS INTOMEDIAM ONEXTHERMS | 9 2035 SBU, R/E SBUz | 9 7025 SB U. RIE 58 Uz | ı        | 2039 58 U. Leses Congret on snow His browth | 19,66 2039 SBU, LOSES CONTROL ON SMOUD 19115 CONCOURTED | 9,4 3000 SBU, R/E SBUR | 66 3050 WB Uz R/E WB B. |
|--------------------|---------------|--|---------------------------------|----------|--------|----------------------|-------------|--------------------------------------|------------------------|-----------------------------|--|--|----------------------|------------------------|----------|---|---|------------------------|-------------------------|
|                    |               | 7-56.4.7.  | мертнея 🤦                       | 2        |        | -                    | 2           |                                      | 2                      |                             |  | 7  |                      | 8                      | 2        | 7   | 4   |                        | m                       |
|                    |               | ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories  (6) (7) (8) (9) | YAWAAR<br>SURFACE<br>MOITIGNOO  |          |        | /                    |             |                                      | N                      | _                           | \  | 1  | ,                    | 2                      |          | 2   | /,  | -                      | ~                       |
| -                  |               | GONME des from at right sategorie  | ВОВРМВУ<br>СНАВРСТЕР<br>ВОВРМВУ |          |        | ,                    |             |                                      | _                      |                             | <del>                                     </del> | $\mid \neg \mid$                                 |                      | /                      | ,        | _   | _   | -                      | _                       |
| ż Ż                |               | Shown these cu   | BOADWAY<br>CONDITIONS           | _        |        | _                    | 8           | \                                    |                        | -                           | 1 -  | 7  | \                    | h                      | _        | 7   | δ.  | -                      | ,                       |
| P.I.N.<br>OR IDENT |               | (9)  | SEVERITY                        | Pool     | 7      | F                    | 20          | 77                                   | 7.50                   | 4                           | 1000   | Th   | 700                  | 000                    | Pool     | 200   | 600   | 100                    | 8                       |
|                    | 12            | 9  | NO' OE NEH'                     | <b>-</b> | 2      | 17                   |             | N                                    | <del> </del>           | ~                           |  |  | 7                    | 2                      | 2        |   |   | 7                      | 7                       |
|                    | DOLONIE       | 0  | ()<br>()<br>TIME                | 280      | 6.     | 8753                 | 0401        | 0805                                 | 6.3h1                  | p27 0                       | 6755   | 6236   | 2760                 | 0061                   | 1350     | 88/2  | 0357  | 0080                   | hp 91                   |
| Y ALBERY           | VY<br>LAGE OF | TIME PERIOD ABER FROM OF ATHS TO   | 1821                            | 10       | 5/4/07 | 11/2/07              | Thelog      | 892/8                                | 12/08                  | 70/08                       | 30/08  | 20   | 70/01/               | 9/20/08                | 80/82/21 | 2/2/2                                       | 12/11/08  | 4/30/118               | 20/11/8                 |
| COUNTY             | D TOWN        | TIME<br>NUMBER<br>OF<br>MONTHS   | % O %                           | L C      | >-     | 51                   | 70          | 21                                   | 100                    |                             |  |  | 1 -                  | 27                     | 28       | 29  | 33  | 31                     | 32                      |

DETAILS OF ACCIDENT HISTORY FOR LOCALION (AS SHOWIN OIN COLLIGION CITY)

OF 1/2

M

SHEET

DETAILS OF ACCIDENT HISTORY F

20 Sleet/Hail/Freezing Rain Fog/Smog/Smoke Other ODESTARIAL CONTROL U, SWERVES KICHT, INTO 2 3 S755072 CEFT 12217 CHANDE LOSES TONTHOU WEATHER P) 53507 Clear Cloudy Rain Snow RA U, SWELVED Ø V3 78/E 8 SBU, ENTERING 872 LOSES CONTROL, STRIKING GAISERAIL STRIKES GAIDE LANES, QLM1 CASE DATE - 46.46.60 FIE ВҮ M DESCRIPTION Snow/Ice Slush Other  $\supset$ 57303 5 Con struction gan ROADWAY SURFACE CONDITION 1. Dry 4. Snow/Ic 2. Wet 5. Slush 3. Muddy 10. Other Š 200 U, KNOKFIRY CHANGES **(**1) 268 (%) 83 141/0 STON, SANG 7/ 5B U, Vz, Uz ENTER MC WHICH TO/E VI Pouce 2 23 MAP 5342 58 Uz **S** B SBUZ AMENDETS Si Use Codes from MV 104 Police Report see back of this form for codes **№** 6000 SEE AROUE SRU, PURSUED BY READING 10 对而 Ac RA ROADWAY CHARACTER
1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Grade
6. Curve at Hillcrest RIE RIE SBU, R/E RIG N AT INTERSECTION WITH/OR BETWEEN N SRUMINGS CTICIES. WOLF 5801 5 Š 5BC, 2 3  $\supset$ ć 533 0, Ø  $\mathcal{K}$ 53 15 X ROUTE NO. OR STREET NAME 53 20 V 000 J 20317 2031 203T 2039 5 7035 2000 0 2055 6 EXIT 703 23 2 203 3 E 3 R LIGHT CONDITIONS
1. Daylight
2. Dawn
3. Dusk
4. Dark Road Lighted
5. Derk Road Unlighted B W (1) Use APPARENT CONTRIBUTING **FACTORS** 1 Coute 70 N 8 00 20 <u>س</u>ر 5 20, Ø, 8 Q. 0 5-OV 5 9 Ñ 7 Ν V Ń 2 N N 4 3 N 1 3 \ ENVIRONMENTAL Use codes from MV 104 (shown at right) for ⊚ **МЕАТНЕЯ** N 2 N \_ SURFACE N N N • 2 \ 10 CHARACTER N 3 I (e) CONDITIONS OR IDENT THOIT 200 Pool 000 100 0 800 100 300 200 0 000 A E H JJ 4 0 (D) SEVERITY \_ 2 N 1 ~ 2 N N 7 W \_ ~ N NO. OF VEH. (4) 3 K480 MZZ denie 22%0 2020 1650 8/10 77 6750 9 2721 1710 0分分/ TIME 9/1046 ~ 12 0 080 720 01/221 1/11 (m) 0 0 60/ 601 1,3/09 50/821 60/18/ 60/62/8 50/22, 05 IN TOWN 60/02 60/21/2 50/52/11 FROM 501 00 121/09 0/22, 0 TIME PERIOD DATE 17 2 N ( ) 7/3 ~ 0 COUNTY MONTHS NUMBER 90 74 5 3 7/7 S 5 8 7 P P K  $\frac{8}{2}$ I 9  $\Theta$ 3  $\sim$ 3

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHUWIN OIN COLLISIUN DIAGNAIN)

N

. V.

TE 213 (9/79)

ION (AS SHOWIN ON COLLISION CITICINE)

OF 1

WEATHER
1. Clear
2. Cloudy
3. Rain
5. Snow
7. Snow Hil/Freezing Rain
7. Fog/Smog/Smoke
1. Other 11/2/2 CASE NO. DATE +44460<u>0</u> FILE ВҮ ROADWAY SURFACE CONDITION 1. Dry 4. Snow/lea 2. Wet 5. Slush 3. Muddy 10. Other (11) DESCRIPTION N SB Uz K Use Codes from MV 104 Police Report W see back of this form for codes U grow more ROADWAY CHARACTER
1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Horest
6. Curve at Hillcrest N ENT 4 RAMPS AT INTERSECTION WITH/OR BETWEEN M <u>\_</u> 1085 SIG ROUTE NO. OR STREET NAME 2031 7502 LIGHT CONDITIONS

1. Daylight
2. Dawn
3. Dusk
4. Dark Road Lighted
5. Dark Road Unlighted ... Ose Ose APPARENT CONTRIBUTING **FACTORS** 100.12 5 5 ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories 6 MEATHER SURFACE CONDITION **®** YAWGAOR **⊘** язтоавано YAWQAOR CONDITIONS OR IDENT P. .. Pool 200 SEVERITY N N  $^{(4)}$ NO. OF VEH. Sonsie 0753 1017 TIME 0 02 (c) 1/281 IN TOWN
☐ CITY
☐ VILLAGE OF △ FROM 2/5/10 3/11/10 TIME PERIOD DATE 2 (G) DIAGRAM NO. COUNTY NUMBER MONTHS  $\infty$ Ю 0 9 9  $\Theta$ 

| E 1      | 156a (3/76)   |                   |  | Page 1 of Z                           |            |
|----------|---|-------------------|--|---------------------------------------|------------|
| 1.       | IDENT. NO.: [1] 0 40 9  | DEPART<br>TRAFF   | STATE OF NEW YORK MENT OF TRANSPORTATION IC AND SAFETY DIVISION HIGHWAY SAFETY | MAIN OFFICE USE:  DIVISION FILE       |            |
| NO.      | CITY OF COMIC   |                   | ESTIGATION REPORT ISTRUCTIONS ON REVERSE)                                      | SCHEDULED FOR B&A                     | . 0        |
| LOCATION | ROUTE NO. OR STREET NAME NY 910B (Wolf K  | <br>              | STATE HIGHWAY NO. FF   | OM OR AT REFERENCE MA                 | ARKE       |
|          | At Intersection With (If Applicable) ROUTE NO. OR STREET  | NAME              | STATE HIGHWAY NO.  | TO REFERENCE MARKI                    | ER<br>() ( |
|          | REASON FOR INVESTIGATION  (a) IDENTIFIED BY ACCIDENT SURVEILLAND  (b) POLICE HAZARD REPORT  (c) RESPONSE TO COMPLAINT OR INQUIRY  (d) REGIONALLY INITIATED PIN 1721.  (e) OTHER (Explain)  009 PIL Reduction Index= 21.22 'Se | 51<br>venty R     | (b) TRAFFIC CONTROLL  (c) MAINTENANCE II  (d) OTHER  (e) NONE                  | I                                     | olete      |
| 4.       | DISCUSSION (Use reverse if additional space is require (a) PROBLEMS IDENTIFIED  | ed — chéck b      | ox if reverse is used 📙 )  |                                       |            |
|          | See allaw   | hed t             | Page 2 of 2  |                                       |            |
|          | (b) PROPOSED SOLUTION   |                   |  |                                       |            |
|          |   |                   |  |                                       |            |
|          |   |                   |  |                                       |            |
|          |   | ٠                 |  |                                       |            |
|          |   |                   | ·  |                                       |            |
| $\vdash$ | (c) ACTION TAKEN  |                   |  | · · · · · · · · · · · · · · · · · · · |            |
|          |   |                   |  |                                       |            |
| 5.       | . ACCIDENT EXPERIENCE   | 6.                | BENEFIT/COST ANALYSIS (se  | e instructions)                       |            |
| N        | NUMBER OF ACCIDENT OF BEGINNING Pro   | TS perty          | Check box if Benefit/Cost Calcu  | ations are attached                   |            |
| ^        | Months Month YEAR Fatal Accidents Accidents Accidents   | mage<br>idents Pi | RINCIPAL INVESTIGATOR  | TITLE F                               | <u> </u>   |
|          | 24 11 07 0 10   | 0<br>8 A          | PPROVEDBY ,  | DATE 3-3-                             |            |
|          | 0 5 1 1 0 9 0 5   | 0 1/              | In kind  |                                       |            |

HSI # 1-1-0409 NY 910B, RM 910B-1101-1010 to 1015 Town of Colonie, Albany County

### Problems Identified

NY Route 910B, Wolf Road, was identified as a Priority Investigation Location (PIL) from RM 1010 to 1015 based on reportable accidents during the period 11/1/07 to 10/31/09. NY 910B, which travels north-south, is a four lane divided Urban Principal Arterial highway with free access. The travel way is 54 feet wide, which accommodates four lanes and a paved flush median that provides refuge for turning movements. This area is commercially developed with various businesses and driveways on both sides of the roadway. Pavement markings and signing are satisfactory. The posted speed limit is 40 MPH.

NY 910B is intersected by Computer Drive at RM 1010. The intersection is controlled by a three color traffic signal. NY 910B is intersected by the Wolf Road Shoppers Park drive from the east at RM 1011 in a stop controlled T-intersection. NY 910B is intersected by Cerone Commercial Drive from the west at RM 1012 in a stop controlled T-intersection. NY 910B is intersected by Metro Park Road from the east at RM 1013 in a T-intersection. The intersection is controlled by a three color traffic signal. NY 910B is intersected by Beltrone Drive from the east at RM 1014 in a stop controlled T-intersection.

The accident study period was 39 months, 1/1/07 to 3/31/10. Based on the 54 accidents that occurred during the study period the accident rate is 2.50 ACC/MVM. This rate is less than the expected accident rate of 3.59 ACC/MVM for similar highways statewide. There were 28 accidents during the 2 year HAL period. The majority of the accidents consisted of rear end, overtaking, and turning accidents due to traffic congestion, generally grouped at the driveways and intersections. There was one accident involving a pedestrian and no accidents involving bicyclists. Of the 53 accidents on this section of highway with pavement condition reported, 14 (26%) occurred on wet pavement and no accidents occurred on snow/ice/slush pavements. There were 7 accidents during the morning commute hours from 6 am to 9 am and 16 accidents occurred during the peak evening commute from 3 pm to 6 pm.

### **Proposed Solution**

There is a project, PIN 1721.51 currently scheduled for letting 11/15/12, to address improvements on the Northway at Exit 4. We have no safety recommendations to offer for the project at this time as a result of this review of the accident history.

### Action Taken

Memo to R-1 Design dated 2/16/11.

| TE '     | 56a (3/76)  | CTATE OF NEW YORK  |                                     |
|----------|---|--|-------------------------------------|
| 1.       | IDENT. NO.: 11 0495   | STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION   | MAIN OFFICE USE:                    |
|          | <del></del>   | TRAFFIC AND SAFETY DIVISION  | DIVISION FILE                       |
|          | D CITY OF Comile  | HIGHWAY SAFETY INVESTIGATION REPORT  | REVIEWED BY                         |
| NO.      | ☐ VILLAGE   | (SEE INSTRUCTIONS ON REVERSE)  | SCHEDULED FOR B&A                   |
| LOCATION | ROUTE NO. OR STREET NAME  | STATE HIGHWAY NO. FRO  | OM OR AT REFERENCE MARKET           |
| Ĭ        | /   | haker Rd 15  | 5 111011204                         |
|          | At Intersection With ROUTE NO. OR STREET N  |  | TO REFERENCE MARKER                 |
|          | (If Applicable) A CR 153 /  | Old Wolf Rd  |                                     |
| -        |   |  |                                     |
| 2.       | REASON FOR INVESTIGATION  (a) IDENTIFIED BY ACCIDENT SURVEILLANCE   | 3. RECOMMENDATION  E SYSTEM  | EMENT (Initiate Proj. Devel. Study) |
|          | T (L) POLICE HAZARD REPORT  | THE TRAFFIC CONTRO   |                                     |
|          | (c) RESPONSE TO COMPLAINT OR INQUIRYP   | M 1721.ST (c) MAINTENANCE IM   |                                     |
|          | (d) REGIONALLY INITIATED ARWY (e) OTHER (Explain)   | (d) OTHER (  | esh Striping sections 48            |
| 20       | 108 PIL; Red Index = 18.11; Sev Rank = 15   |  | <sup>(*</sup> )                     |
| 4.       |   |  | \                                   |
| 1        | (a) PROBLEMS IDENTIFIED   |  |                                     |
|          |   |  |                                     |
|          |   |  |                                     |
|          |   |  |                                     |
|          |   |  |                                     |
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| İ        |   |  |                                     |
| 1        | and the state of the second second second second second second second second second second second second second | and the second of the second o |                                     |
|          | (b) PROPOSED SOLUTION   |  |                                     |
|          |   |  |                                     |
|          |   |  |                                     |
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|          |   |  |                                     |
|          |   |  |                                     |
|          |   |  |                                     |
|          | •   |  |                                     |
|          |   |  |                                     |
|          | (c) ACTION TAKEN  |  |                                     |
| ı        |   |  |                                     |
|          |   |  |                                     |
| l        |   |  |                                     |
| 5.       | ACCIDENT EXPERIENCE   | 6. BENEFIT/COST ANALYSIS (see  | instructions)                       |
| -        |   |  | Instructions/                       |
| N        | umber PERIOD NUMBER OF ACCIDENTS  | Check box if Benefit/Cost Calculat   | tions are attached                  |
| ٨        | of BEGINNING Fatal Injury Dama  |  |                                     |
| -   "    | MONTH YEAR Accidents Accidents Accidents  | · 1 · · · · / 1 · · · · · · ·  | TITLE                               |
|          | 120107376   | / N/Rwa  |                                     |
| H        | 12010800  | ADDROVEDAY (   | DATE                                |
|          | 17 0 1 0 9 0 1 3  | W DRIVER   | 3-3-11                              |
| L        |   | 7 7 7 7 6000 00  |                                     |

HSI #4-1-0495 NY 155, RM 155-1101-3047 Town of Colonie, Albany County

### Problems Identified

NY Route 155 identified as a Priority Investigation at TH RM 3047 based on reportable accidents during the period 1/1/07 to 12/31/08.

This section of NY Touring Route 155 is the intersection of Albany County Route 151, Albany Shaker Road, traveling east-west with Albany County Route 153, Old Wolf Road, carrying Touring Route 155 north from the intersection, and the southbound on ramp to 187, the Northway, south from the intersection. The intersection is controlled with a 3 color traffic signal.

During the 36 month accident study period from 1/1/07 to 12/31/09 there were 21 total accidents. Of the 18 accidents with highway surface condition reported there were 5 (28%) wet pavement accidents and 2 (11%) snow/ice pavement accidents. There were 11 rear end accidents at the signal, including 7 SB. There is no apparent treatable pattern of accidents.

### **Proposed Solution**

The dotted "skip marks' that separate the 2 SB left turn lanes were observed to be faded — during the field review. These pavement markings were refreshed in October 2010.

### Actions Taken

Letter to complainant, dated 12/22/10.

# DEPARTMENT OF TRANSPORTATION TRAFFIC ENGINEERING AND SAFETY DIVISION COLLISION DIAGRAM #乙

Sheet 1 of

Town of Colonie County Intersection NY910B; RM 910B- 1101-1010 TD From 1/1/47 To 3/31/10 MED Period 3 Years 3 Months Cerone Comm Dire Compation Dr 1 Computer Drive W Not all features shown Not to scale COLLISION —Rear-end - Head-on ← Moving Vehicle ← - Pedestrain \_ Side-swipe ← R - Bicycle ← M - Motorcycle Left-turn ☐ Fixed Object Out of control ←→→→ Backing Vehicle O Personal Injury **←** Stopped Vehicle Right-angle Overturned Fatal Injury Parked Vehicle

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

FE 213 (9/79)

OF

SHEET DIAGRAM NO.

N6 V-2 SIGH SP MANE STRUCK BY NB 1-2 シ Simis BACK IN TO PATH OF VI BEALTS (BENPTY BEAIND MINION/ED VEH RIGHT ANGLE V-1 GNTERED TRAFFIC WB. STEACK NBV2 > F13 Sleet/Hail/Freezing Rain Fog/Smog/Smoke Other Steack 1/2 STACTING TOGO ON GREEN HERE PEO STEPPED DMV <u>ه</u> س Of V-1 FOOT SUIPPED FROM END-NB. V-Z SLOWING IN TRAFFIC REL 1011 WEATHER EB V1 STEMEN BY SB V-2. REAR END-5B, V-2 SLOWING IN CRAPPIO RIGHT ANGLE 1-1 WAVED INTO TRAFFIC WB. Clear Cloudy Rain Snow STRUCK MAKE 1010 KINHT ANGLE EB VI MINDE RIGHT ON RED. Š. KIGHT ANGLE V-I ENTERED TRAFFIC WS. るの DATE CASE FILE V-1 CHANGED LANG REAR GND-NB, V-1 SLOWING TO Snow/Ice Slush Other DESCRIPTION ING VI MAKING LEFT INTO DRIVE SO VI RAN RED, V-1 CHANGED ROADWAY SURFACE CONDITION 4. 3. 10. 10 101 C Dry Wet Muddy Use Codes from MV 104 Police Report 1101-1010 27 see back of this form for codes ROADWAY CHARACTER AT INTERSECTION WITH/OR BETWEEN 2 OVERCENTE-NB, 1010 0VER-TAKE-S.B. Straight and Level Straight and Grade Straight at Hillcrest KEPA END-NB 1010 PEAR GNO-NB GNO-56, KIGHT ANGLE DIDIKUH ANGUE Curve at Hillcrest Curve and Level Curve and Grade ROUTE NO. OR STREET NAMI RM GIOB-公司 105 BFIR ÷ 4.6.4.6.0 NY 910 B Dark Road Lighted Dark Road Unlighted 701 010 GHT CONDITIONS 00 113 APPARENT CONTRIBUTING FACTOR&M Daylight Dawn しら (2) 2,9  $\sim$ Dusk  $\equiv$ J 2 3 4  $^{\prime}$ 2 0 -3 5 3 (G) Codes from MV 104 own at right) for CONDITION 0 SURFACE (®) YAWGAOR OR IDENT SNOITIGNO  $\preceq$ \_ (<u>o</u>) 7 LIGHT 10 010 400 2/1/5 8 4145P17 100 100 900 1 PDD 0016 Pool PTT 8:418/0/000 7 1-31/2 AR:21 (D **VTIRBVBS** 7 \_ 7 7 5 (4) $\mathcal{L}$ NO' OF VEH. Siy3 Pl 1:30 P 3:47P 14°40 10711732PI 10:036 1:309 11:26A 2:58P 13:27P 8:02A TIME 101 (<del>-</del> (bany 3 5 10 S 5 5 FROM ☐ VILLAGE OF 5 07 TIME PERIOD 166 121 2 DATE S 25 80 M 5 8 2 2 0 M TOWN COUNTY CITY NUMBER MONTHS  $\sigma$ 4 2 حح 9 S 0 2  $\bigcirc$ 7

DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

TE 213 (9/79)

SHEET  $\frac{2}{5}$  OF  $\frac{5}{5}$ 

and ha NB V2 SKI 3 5612 NBVZ SKARK と言い SIZE SIGNAL 2 SPENCE Snow Sleat/Hail/Freezing Rain Fog/Smog/Smoke Other F15 盃 上 25 3 CED TRAFFIC L'EGREPH. STRICT STRICT となかで STRUCK F STRUCK STONCK SB V-2 Dmv / ---SEC ENTERED TRAFFIC WE. QXXX WEATHER T RAFFIO +PAFFIC Clear Cloudy Rain SEB Š. 8 8 CHAMBED LAND ENTERED TRAFFIC EB AT RED 88 V-1 CHANGED LANES 8 DATE CASE - 44466 FILE STRUCK STURRED V-1 CHANGED LANES ANGLE IN ENTERED TRAPFIC ₽¥ ENTERED TEARNO 1- FINERO TRARL STUPPED IN NJ SLOWING IN Snow/Ice DESCRIPTION 92 ROADWAY SURFACE STUPPED STORPED ATTEMPTED LEFT TURN TWEN 4.6.0 1.3 Dry Wet Muddy 010 10 <del>-64</del>-Use Codes from MV 104 Police Report 1-1 7.7 四 \_ 1-1 see back of this form for codes ROADWAY CHARACTER
1. Straight and Level
2. Straight and Grade
3. Straight at Hillcrest
4. Curve and Level
5. Curve and Grade
6. Curve at Hillcrest NB AT INTERSECTION WITH/OR BETWEEN RICH MACE, V-1 M PYLING NB. 8 ON FRETHER, ING -28 T ANGLE Krok GNO-CB KERK END-NB. KM 910B-1101-SCHIEN SON CND-CND-ELGHT ANGE ) (SJ) RIGHT PHIGHE 9716JUAN ROUTE NO. OR S& REET NAME RIGHT NB 7.1 5817 KEAR 图 RIGHT EM 9103 Dark Road Lighted Dark Road Unlighted LIGHT CONDITIONS
1. Daylight
2. Dawn
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| (61/6) |   |
| TE 213 |   |

DIAGRAM NO.

# DETAILS OF ACCIDENT HISTORY FOR LOCATION (AS SHOWN ON COLLISION DIAGRAM)

OF

SHEET

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SILVAL NG V.Z 1887 128 3 3 **まらり** NB 172 TABEL TABEL 5/1115 1.3 4722 2 S ER 5-12 NCK SB 1-2 Snow Sleet/Hail/Freezing Rain Fog/Smog/Smoke Other E KIRE 1272 3 STRINCIL TOWER STORICK LOAREIG 2/4/11 SCOWING IN TRAFFIC FOR V-1 VEERED STRUCK STRUCK 2MV > FROM WEATHER Clear Cloudy Rain BOTH VEHICLES STARTING IN 8M SLOWING IN TRAFFIL Š. <u>2</u> 3 TEAPPICAB TURKY DATE CASE - 44460 <u>ه</u> ا FILE TRAFIC TRAFAIC NB NB 14ND STRED SKARK TOAFFIC DESCRIPTION Snow/Ice Slush Other TRAFFIC RIGHT KILLIT ANGLE V-1 ENTERED TRAPPIC 四  $\alpha$ ROADWAY SURFACE S CHANGED CHANGED STAPPED IN SIGNAL 4. % 0. MADE SB V-1 ATTEMPTED SCOWING AT V-1 ENTERED V-C AND V-- FNTERED EWTERGO Dry Wet Muddy 1015 WA GNATERCED FI odes from MV 104 Police Report 7 STIPPED P 5 ee back of this form for codes ROADWAY CHARACTER ₩ B. 1 AT INTERSECTION WITH/OR BETWEEN END-5B 11-2 Straight and Level Straight and Grade Straight at Hillcrest 1101 - 1010OVERTRIE-NA <u>N</u>8 3 Curve at Hillcrest Curve and Level Curve and Grade END-58. GND-SB CEAR END-SB. 1-1 - NO OHAH ANKLE PIGHT YANGU RIGHTAMORE ANGLE PLIGHT THERE FIND-CND-ROUTE NO. OR STREET NAME 913 ( VERCIPIKE -Molt RIGHT REAR DER KILT KILT DOK DOK TO BE CHR. RFAR 9.6,4.0,0 KM 910 K-Daylight
Dawn
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Dark Road Lighted N A LOB LIGHT CONDITIONS
1. Daylight
2. Dawn
3. Dusk Use O Use APPARENT CONTRIBUTING 013 5 00 0 0 8 6)0 FACTORSAM 5 37 18,00 S م Q 7 Q $\Box$ ( 7-CI  $\rightarrow$ 409 کے N ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories 5 C (G) ( **MEATHER** 3 0 SURFACE CONDITION ت  $\otimes$ YAWQAOR RHARACTER YAWGAOR OR IDENT. CONDITIONS **⑥** \_\_\_ THDI. 000 001 000 000 700 000 1000 B (b) SEVERITY J 2 C. SIL (4)C' 'ON J. ... O 17.14 1:026 12308 7:43A 11:28# 12.52 SIYIA 9:21 A 1:04P 13/15/ 16:20 P 9 N.S 0 TIME 1308 0 (c) クタアン TOWN CITY FROM 0 00 69 9 C 60 0119109 109 1109 09 5 TIME PERIOD  $\sim$  $\leq$ DATE 0 (P) 8 0 00 77 7 3 حس 7 2 COUNTY 0 0 NUMBER MONTHS 0 OF 25 0 50 9 Θ 9 3 'n 3 3 >

N TE 213 (9/79)

DETAILS OF ACCIDENT HISTORY FOR LCCATION (AS SHOWN ON COLLISION DIAGRAM)

OF 10 6 SHEET DIAGRAM NO.

| COUNTY                  | DA                             |                      | - OR              | P.L.N.   |                                  |   | 10                   | 10 6 B     | OUTE NC   | 9.0R           | 11 10 410 9 ROUTE NO. OR TREET NAME CASE NO. DMY MIS / SIMS   |
|-------------------------|--------------------------------|----------------------|-------------------|--|----------------------------------|---|----------------------|------------|---|----------------|---|
| TOWN CITY               |                                | 0                    |                   |  |                                  |   |                      | <u> </u> ∢ | T INTER   | SECT           | N BY WED  |
|                         |                                |                      |                   |  |                                  |   |                      |            | RIM   | 910            | RM 910B - 1101-1010 to 1015 DATE  |
| 00 V /07/               | 1_0/                           | (                    |                   | 1 m = m = 0 10   | NVIR<br>se cod<br>hown<br>ese ca | ENVIRONMENTAL Use codes from MV 104 (shown at right) for these categories | NTAL<br>MV 1:<br>for |            | LIGHT CONDITIONS 1. Daylight 2. Dawn 3. Dusk 4. Dark Road Lighted | IONS<br>ighted | ROADWAY CHARACTER ROADWAY SURFACE 1. Straight and Level CONDITION 2. Straight and Grade 1. Dry 4. Snow/lee 2. 3. Straight att Hillcrest 2. Wet 5. Slush 3. 4. Curve and Level 3. Muddy 10. Other 4. |
| 10 2/3//10 EH. C        | . С<br>ЕН: С                   | ) ^                  |                   | SNS (  |                                  |   | -<br>NC              |            |   | Use            | 6. Curve at Hillcrest les from MV 104 Police Renort   |
| DATE TIME OO OF V       | ио. оғ v<br>severit<br>соиріты | SEVERIT<br>CONDITION | LIGHT<br>CONDITIO |  | AWGAOR                           | ROADWA<br>CHARAC<br>ROADWA<br>SURFACE                                     | СОИВІТІ              | WEATHE     | APPARENT<br>CONTRIBUTING<br>FACTORS                               | 28             | see back of this form for codes  (1)  DESCRIPTION   |
| 2/20/09 4:34P 2 PI-2 1  | 11334P 2 PE-2                  | B                    | ¿~5               | and the state of t |                                  |   |                      |            | 5   | 580            | 1015 RIGHT ANGLE, V-1 ENTERED TRAPFICE OB STOWCK BY SB V2   |
| 10/31/09 6:19A 2 Pt-1 4 | 4                              | =                    |                   |  |                                  |   | 7                    | 3   -      | 7   | INS            | RIGHT ANGLE V-1 ENTERED TRAFFIC WB, STEWCK BY NB V-2  |
| 3/28/10 12:18/2 / 1851  | 7                              |                      |                   |  |                                  |   |                      | 7          | 17,7  | 010            | RIGHT ANGLE, SB V-1 PASSED RED SIGNAL, STRUCK GB V-2  |
| 1 1510 6:13P 2 PEZ 4    | 2 162                          | PEZ                  |                   | ===  |                                  |   |                      | 7          | - 5   | 110            | REAR GNO-SB, V-1 STUPPED TO MAKE TURN   |
| 3/18/10 12:30P 2 PEI 1  | S                              | 7 PT-1               |                   |  |                                  |   |                      | 7          | 0   | K101           | REAR GND-NB, V-2 BRAKED ABRUPTY BELLIND MINNOLUED VEH   |
| 3/26/10 5:16P 2 800 11  | 7                              | 2 600 11 1           | - 0               | -  |                                  |   |                      |            | 9   | h  Q           | PERRENDING UZ SLOWING IN TRAFFIC  |
|                         |                                |                      |                   |  |                                  | · · · · · · · · · · · · · · · · · · ·                                     |                      | ***        | -   |                |   |
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# MEMORANDUM DEPARTMENT OF TRANSPORTATION

TO: A. Trichilo, R-1 Design, 3rd floor

FROM: M.J. Kennedy, R-1 Traffic Engineer, 4th floor

SUBJECT: PIN 1721.51: I87 Exits 3/4

Updated Accident Data

**Town of Colonie, Albany County** 

DATE: May 11, 2010

Attached please find the updated Verbal Description Reports for the subject project as you requested on 3/23/10. The accident data covers the 3 year period from 1/1/07 to 12/31/09.

The Northway, I87, is a six lane divided Urban Principal Arterial Interstate highway with full control of access. There were no High Accident Locations (HALs) on the section of highway from RM 2018 to 2042 based on accident data between 11/1/07 and 10/31/09. There were 262 total accidents on this segment of I87 during the study period. The accident rate was 0.90 ACC/MVM which is less than the expected accident rate of 1.10 ACC/MVM for similar highways statewide. There were no accidents involving pedestrians or bicyclists.

NY 910B, Wolf Road, is a four lane divided Urban Principal Arterial highway with free access. Wolf Road is a Priority Investigation Location (PIL) from RM 1010 to 1015 and from RM 1016 to 1019 based on accident data between 11/1/07 and 10/31/09. There were 166 total accidents on this segment of Wolf Road during the study period. The accident rate was 4.60 ACC/MVM which is greater than the expected accident rate of 3.59 ACC/MVM for similar highways statewide. There was one accident involving a pedestrian and no accidents involving bicyclists. These locations have been added to the program for Highway Safety Investigations. HSI reports will be forwarded when completed.

NY 155, **Watervliet Shaker Road**, is a two lane divided Urban Minor Arterial highway with free access. Watervliet Shaker Road is a Safety Deficient Location (SDL) from RM 3058 to 3061 based on accident data between 11/1/07 and 10/31/09. There were 35 total accidents on this segment of Watervliet Shaker Road during the study period. The accident rate was 7.99 ACC/MVM which is greater than the expected accident rate of 3.94 ACC/MVM for similar highways statewide. There was one accident involving a pedestrian and no accidents involving bicyclists. This location has been added to the program for a Highway Safety Investigation. A HSI report

A. Trichilo, R-1 Design PIN 1721.51 P. 2 of 2

will be forwarded when completed.

Accident data is attached for Albany County Route 151, Albany Shaker Road, from Wolf Road to Dalessandro Boulevard. There were 118 accidents on this segment of Albany Shaker Road during the study period. A signal study at the intersection of CR 151 with Old Wolf Road (CR 153) and the Exit 4 SB on ramp is underway. A HSI report will be forwarded when completed.

Accident data is attached for Albany County Route 153, Old Wolf Road, from Albany Shaker Road to the Exit 4 SB off ramp. There were 43 accidents on this segment of Old Wolf Road during the study period.

Accident data is attached for the I87 SB Exit 5/Exit 4 Merge Diverge Area service road. There were 19 accidents on the various ramp segments during the study period.

Please be advised that accident data at intersections and ramps will appear on both roadways in the summaries. We have no safety recommendations to make as a result of our initial review of this accident history. If you have any questions concerning the data provided, please contact Mike Doody of this office at 388-0372.

MJK:MED Attachments

cc: J. Rutnik, Traffic 4th floor

# ATTACHMENT G PEDESTRIAN GENERATOR CHECKLIST

### PIN: 1721.51

### **DESCRIPTION:** Exit 3/4 Access Improvements

### MUNICIPALITY/COUNTY: Town of Colonie / Albany County

PEDESTRIAN GENERATOR CHECKLIST

PREPARED BY: LMW REVIEWED BY: Note: The term reperator in this document refers to both pedestrian generators (where pedestrians originate) and destinations (where pedestrians travel to). A check of yes indicates a potential need to accommodate pedestrians and coordination with the Regional Bicycle and Pedestrian Coordinator is necessary during project scoping. Answers to the following questions should be checked with the local municipality to ensure accuracy. Is there an existing or planned sidewalk, trail, or pedestrian crossing facility? YES⊠ NO□ Comments: Wolf Rd is part of CDTC's Proposed Priority Bicycle/Pedestrian Network and improving system connectiving between the existing pedestrian/bicycle facilities on Wolf Rd and those constructed as part of the Albany-Shaker/Watervliet-Shaker Rd project is a secondary objecting of the proposed project. 2. Are there bus stops, transit stations or depots/terminals located in or within 800m of the project area? YES NO Comments: CDTA currently provides service along I-87, Albany-Shaker Rd and Wolf Rd within the project study area. YES⊠ NO□ Is there more than occasional pedestrian activity? Evidence of pedestrian activity may include a worn path. Comments: Moderate to high pedestrian activitiv was observed along the existing sidewalks within the project corridor. In addition, there is evidence of pedestrian activity on Albany-Shaker Rd west of Wolf Rd. Are there existing or approved plans for generators of pedestrian activity in or within 800m of the project that YES NO promote or have the potential to promote pedestrian traffic in the project area, such as schools, parks, playgrounds, places of employment, places of worship, post offices, municipal buildings, restaurants, shopping centers or other commercial areas, or shared-use paths? Comments: There are several generators of pedestrain activity within and around the proposed project area. Retail establishments, hotels, the Albany International Airport, office space, Ann Lee Pond Nature and Historic Preserve and the Crossings at Colonie are all located in or adjacent to the project study area and have potential to promote pedestrian activity. Are there existing or approved plans for seasonal generators of pedestrian activity in or within 800m of the YES□ NO⊠ project that promote or have the potential to promote pedestrian traffic in the project area, such as ski resorts, state parks, camps, amusement parks? Comments: Ann Lee Pond Nature and Historic Preserve, the Crossings at Colonie, and the Shaker Historic site are all located adjacent to the project study are and have potential to promote seasonal pedestrian activity. Is the project located in a residential area within 800m of existing or planned pedestrian generators such as those YES⊠ NO□ listed in #4? Comments: Residential areas are located along Wolf Rd, Sand Creek Rd, Albany-Shaker Rd, and Watervliet-Shaker Rd. Although there are not many residential areas located within the project study area, several are located adjacent to the project study area within 2,500 ft of the pedestrian generators listed above. From record plans, were pedestrian facilities removed during a previous highway reconstruction project? YES $\square$  NO $\square$ Comments: Pedestrian Facilities have not been removed during previous highway reconstruction projects. Did a study of secondary impacts indicate that the project promotes or is likely to promote commercial and/or YES□ NO⊠ residential development within the intended life cycle of the project? Comments: The project is not likely to promote commercial and/or residential development within the intended life cycle of the project. Does the community scomprehensive plan call for development of pedestrian facilities in the area? YES⊠ NO□ Comments: Wolf Road is part of CDTC's Proposed Priority Bicycle / Pedestrian Network and improving system connectivity between the existing pedestrian/bicycle facilities on Wolf Rd and the facilities constructed as part of the Albany-Shaker/Watervliet-Shaker Rd project is a secondary objective of the proposed project. Based on the ability of students to walk and bicycle to school, would the project benefit from engineering YES NO measures under the Safe-Routes-To-School-Program? Eligible infrastructure-related improvements must be within a 3.2km radius of the project. Comments: Several schools within the North and South Colonie Central School Districts are located

ADDITIONAL COMMENTS:

measures under the Safe-Routes-To-School Program.

Include comment on exceptional circumstances from EI 04-011 if pedestrian accommodations are warranted but not provided.

within 2 miles of the project study area, the immediate project area would not benefit from engineering

| <b>Note</b> : This checklist should be revisited due to a project delay or if site conditions or local planning changes during the project development process. |
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